# Poliovirus Risk Analysis for Conflict-Affected Polio-Free Countries

**EMRO – December 2016**

# Background

- Detection of WPV1 in Borno State, Nigeria, more than 2 years after the last case has demonstrated the risk posed by conflict-affected areas with inaccessible populations.

- In addition to the regular risk assessment, EMRO polio team initiated an in-depth desk review of conflict-affected polio free countries of EMRO to assess:
  - the risk of potential missed poliovirus transmission
  - The potential for an outbreak should poliovirus be re-introduced
  - Current/future mitigation measures

# Implications of the Polio Transmission Detected in July 2016 in Nigeria

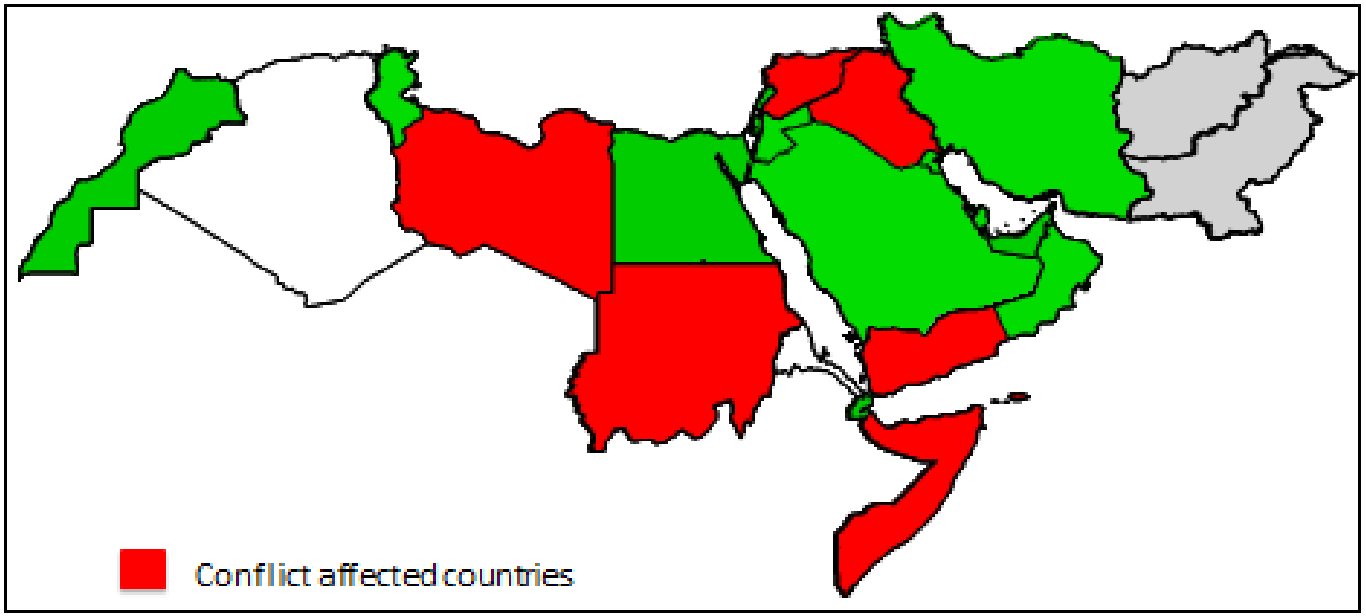
- Polio Virus can survive undetected in inaccessible populations for a long time; *potentially all inaccessible populations pose a risk.*

- The transmission in NE Nigeria poses a renewed risk of international spread:
  - Route of spread of the multi-country polio outbreaks of 2003-2005 and 2013-2014 was from Nigeria eastwards

- Implications for EMRO:
  - Confidence of polio free countries
  - Potential resource diversion
  - Potential importation and subsequent outbreaks

# Conflict Affected Polio Free Countries Reviewed

1. Somalia
2. Yemen
3. Libya
4. Syria
5. Iraq
6. Sudan



# Purpose of The Polio Risk Analysis

1. To analyze the polio risk in conflict-affected countries and populations:
   - Risk of undetected/missed polio transmission
   - Risk of WPV spread if imported, or emergence of VDPV
2. To identify mitigation measures in place
   - Strategies to improve immunity
   - Strategies to improve surveillance
   - Innovative strategies to reach mobile populations
3. To propose way forward/recommendations

# Ingredients for Polio Risk Analysis

1. Inaccessibility for immunization/surveillance; security compromised areas
2. Seasonal mobile and underserved pop: size, distribution, strategy
3. Immunity Profile:
   - RI coverage
   - SIAs conducted
   - Immunity status of AFP Cases
4. AFP Surveillance Sensitivity and Quality
   - AFP Cases Distribution, especially areas with limited program accessibility
   - Key Indicators: NP-AFP Rate, Stool Adequacy, NPEV Rate, others
5. Supplementary strategies (to improve surveillance and immunity profile):
   - Transit Point Vaccinations (for mobile and inaccessible populations)
   - Hard To Reach SIAs focused on nomads & populations in remote settlements

# Country Polio Risk Conclusion

1. **AFP surveillance system quality and sensitivity**

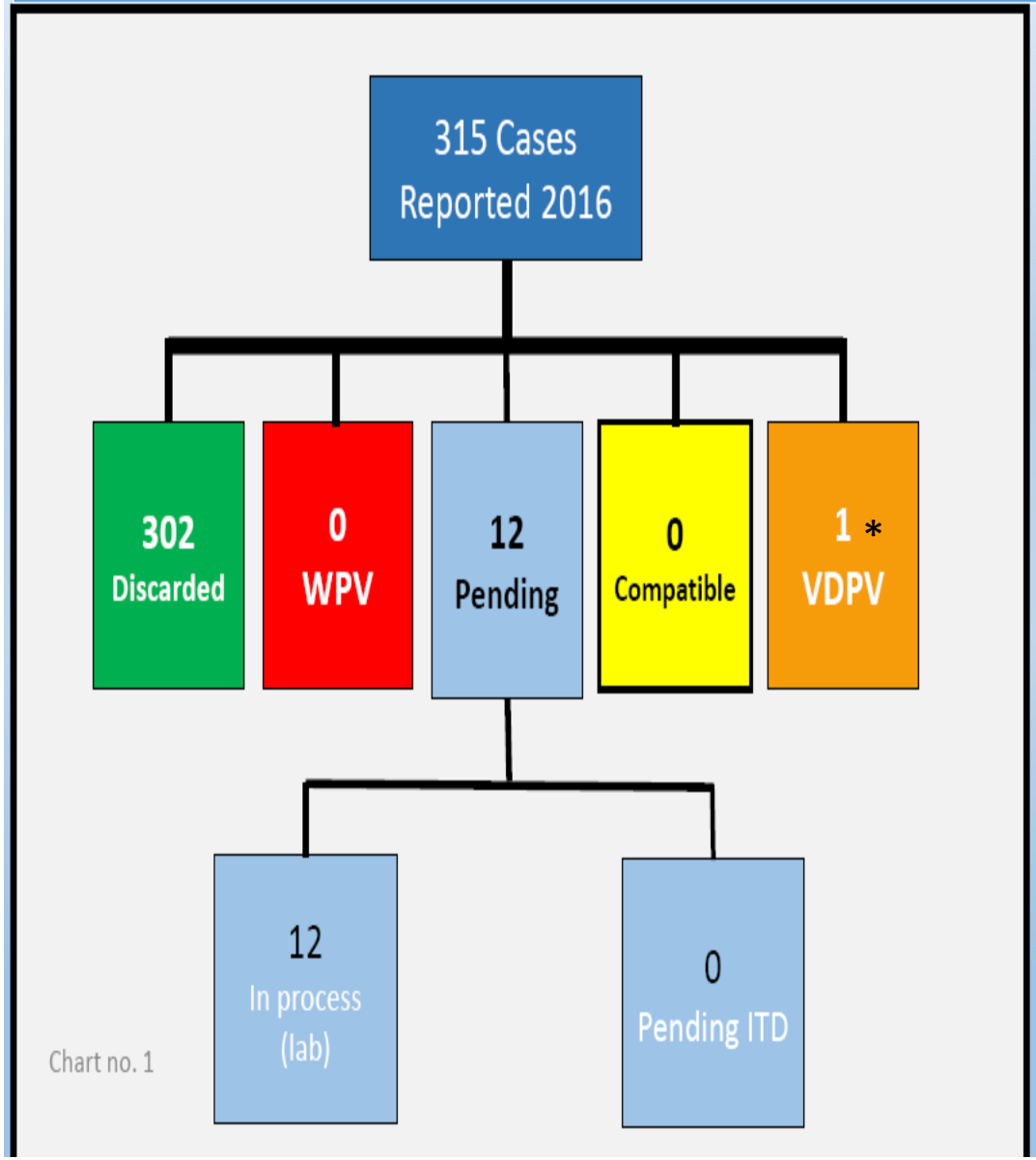
2. **Population immunity: Presence of cohort of susceptible or persistently missed children**

3. **Risk of:**
   - Undetected Polio (WPV/cVDPV) transmission
   - WPV Importation, spread and/or emergence of VDPV.

# Somalia

## December 2016

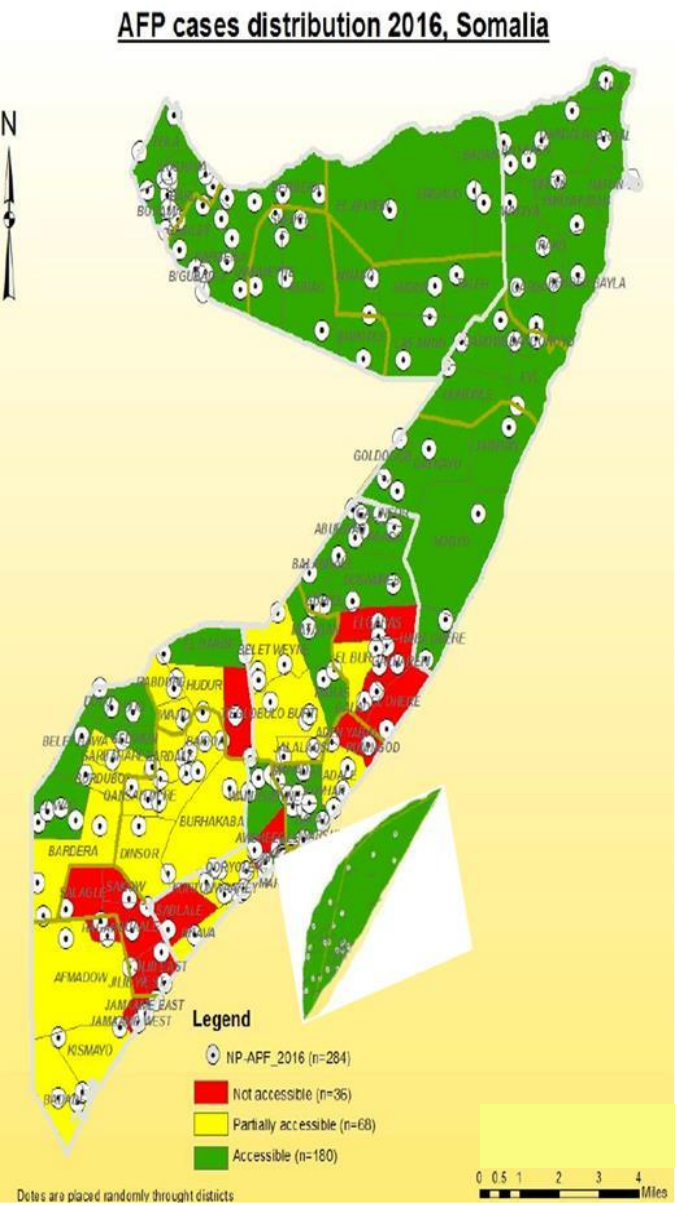
# Classification of AFP cases by status (2015-2016)



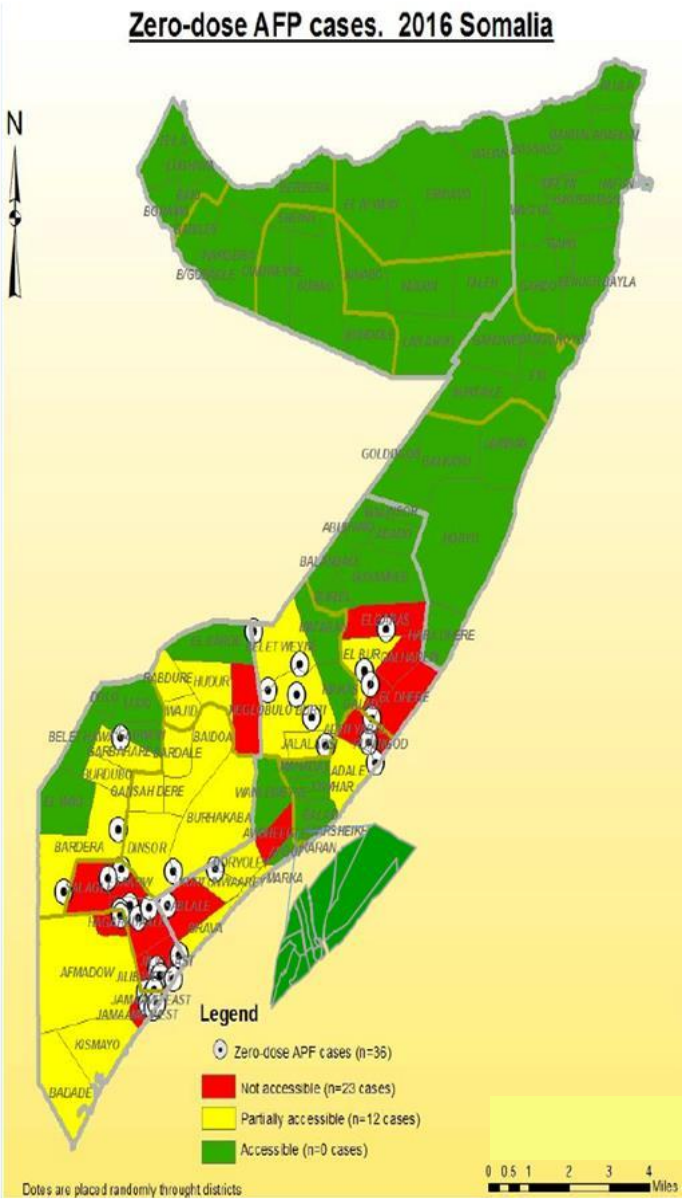

| REGION | 2015 | | | | | 2016 | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Pending ERC | Pen-ding Lab | Dis-carded | Com-Patible | Total | Pending | Discarded | VDPV | Total |
| BANADIR | 0 | 0 | 30 | 0 | 30 | 1 | 29 | 0 | 30 |
| GALGADUD | 0 | 0 | 30 | 0 | 30 | | 25 | 0 | 25 |
| HIRAN | 0 | 0 | 16 | 0 | 16 | | 15 | 0 | 15 |
| L. SHABELLE | 0 | 0 | 20 | 0 | 20 | 1 | 23 | 0 | 24 |
| M. SHABELLE | 0 | 0 | 14 | 0 | 14 | 1 | 18 | 0 | 19 |
| BARI | 0 | 0 | 27 | 0 | 27 | 2 | 22 | 0 | 24 |
| MUDUG | 0 | 0 | 14 | 0 | 14 | 1 | 13 | 0 | 14 |
| NUGAL | 0 | 0 | 10 | 0 | 10 | 1 | 10 | 0 | 11 |
| AWDAL | 0 | 0 | 11 | 0 | 11 | | 18 | 0 | 18 |
| GALBEED | 0 | 0 | 11 | 0 | 11 | 2 | 16 | 0 | 18 |
| SAHIL | 0 | 0 | 6 | 0 | 6 | | 8 | 0 | 8 |
| SANAQ | 0 | 0 | 7 | 0 | 7 | 1 | 6 | 0 | 7 |
| SOOL | 0 | 0 | 9 | 1 | 10 | | 5 | 0 | 5 |
| TOGDHER | 0 | 0 | 8 | 0 | 8 | | 10 | 1 | 11 |
| BAKOOL | 0 | 0 | 7 | 0 | 7 | 1 | 8 | 0 | 9 |
| BAY | 0 | 0 | 20 | 0 | 20 | | 19 | 0 | 19 |
| GEDO | 0 | 0 | 16 | 0 | 16 | | 21 | 0 | 21 |
| LOWER JUBA | 0 | 0 | 17 | 0 | 17 | 1 | 25 | 0 | 26 |
| MIDDLE JUBA | 0 | 0 | 7 | 0 | 7 | | 11 | 0 | 11 |
| Grand Total | 0 | 0 | 280 | 1 | 281 | 12 | 303 | 1 | 315 |

* aVDPV2

# Distribution of NPAFP and Zero Dose AFP Cases Vs Accessibility of Districts, 2016 – Somalia

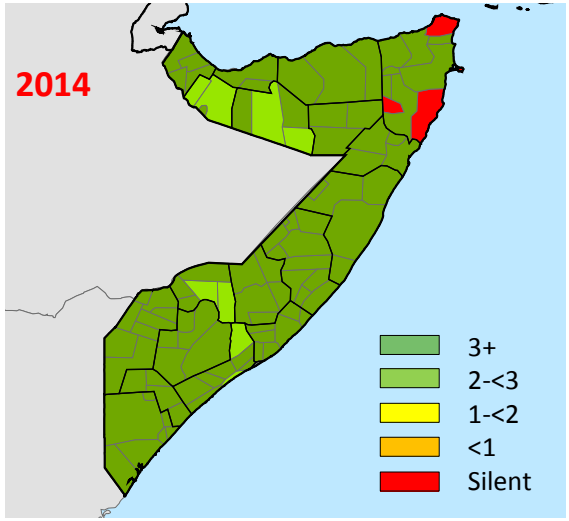


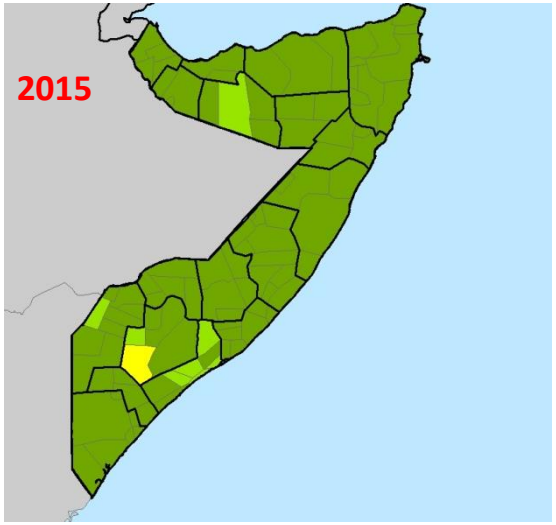

- Distribution of AFP cases reported in 2016 is uniform across districts despite accessibility issues in all zones.
- All the 39 reported zero dose AFP cases are from inaccessible 69% (n=27) and partially accessible districts 31% (n=12)
- Of all cases from inaccessible districts, 37% are from central and 63% from South Zone.

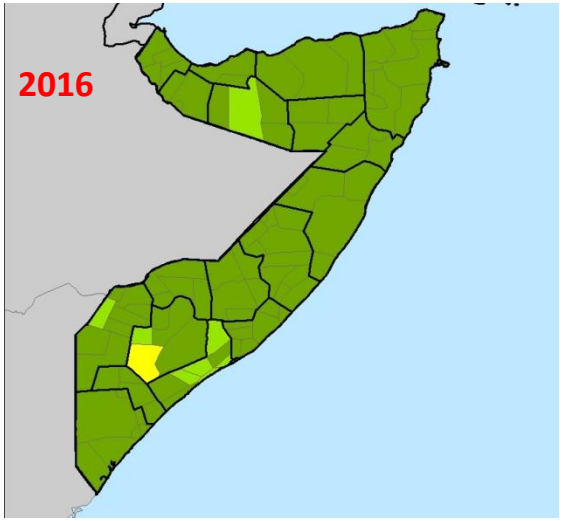


# Key Surveillance indicators at district level, SOM 2014-2016

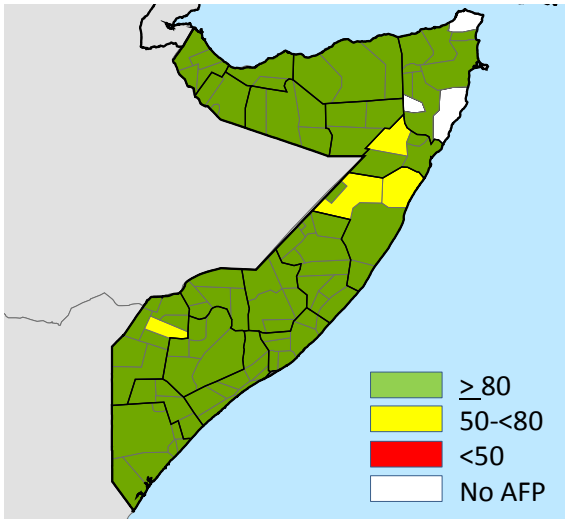
## Non-Polio AFP rate

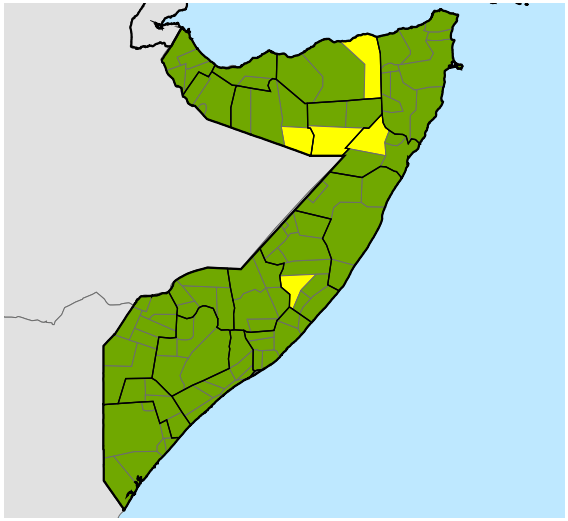


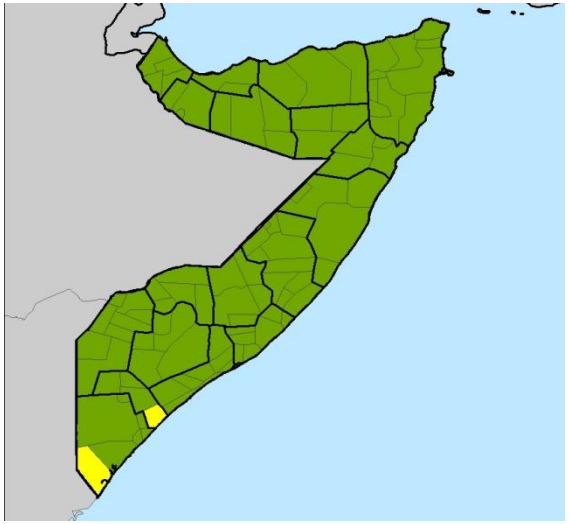




## Stool Adequacy rate





# AFP Surveillance Indicators by Accessibility Status of Districts, 2016 – Somalia

| Accessibility | # of districts | U-15 Pop in this area | # AFP cases Reported | # Cases reported by VPVs | % Cases reported by VPVs | NP AFP rate | # cases with lab result | % of Stool adequacy | % inv. Within 48 hrs | % notif. within 7 days | % Specimens with NPEV | % cases with Sabin like virus |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Inaccessible** | 17 | 583,769 | 41 | 30 | 73% | 7.2 | 40 | 100% | 100% | 89% | 16% | 8% |
| **Partially accessible** | 23 | 1,622,044 | 75 | 33 | 44% | 4.7 | 74 | 98% | 97% | 90% | 19% | 9% |
| **Accessible** | 75 | 3,793,631 | 194 | 77 | 40% | 5.2 | 185 | 100% | 99% | 94% | 12% | 7% |
| **National** | 115 | 5,999,444 | 310 | 136 | 45% | 5.3 | 299 | 99% | 99% | 92% | 14% | 8% |

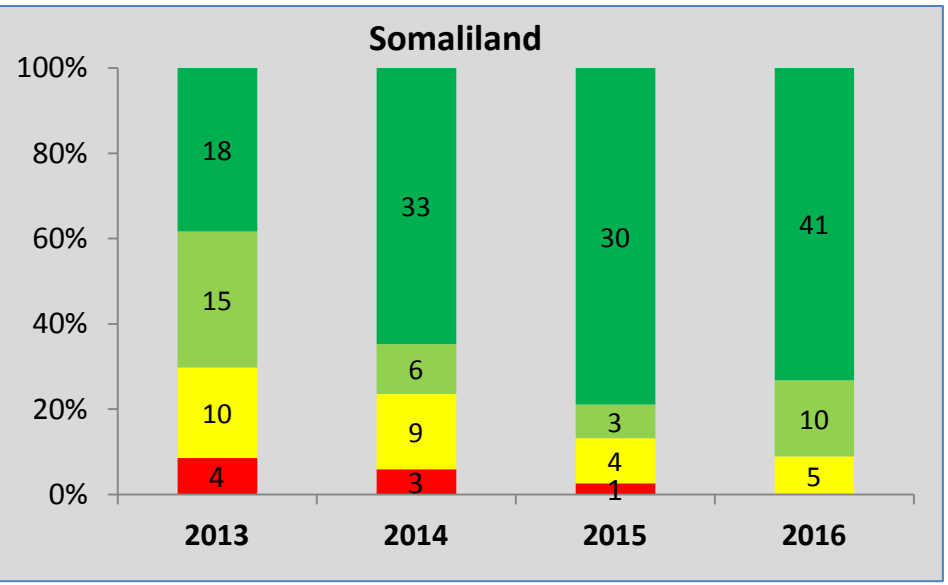
VPVs have continued supporting AFP surveillance by reporting 73% (n=30/41) from inaccessible and 44% (n=33/75) from partially accessible districts.

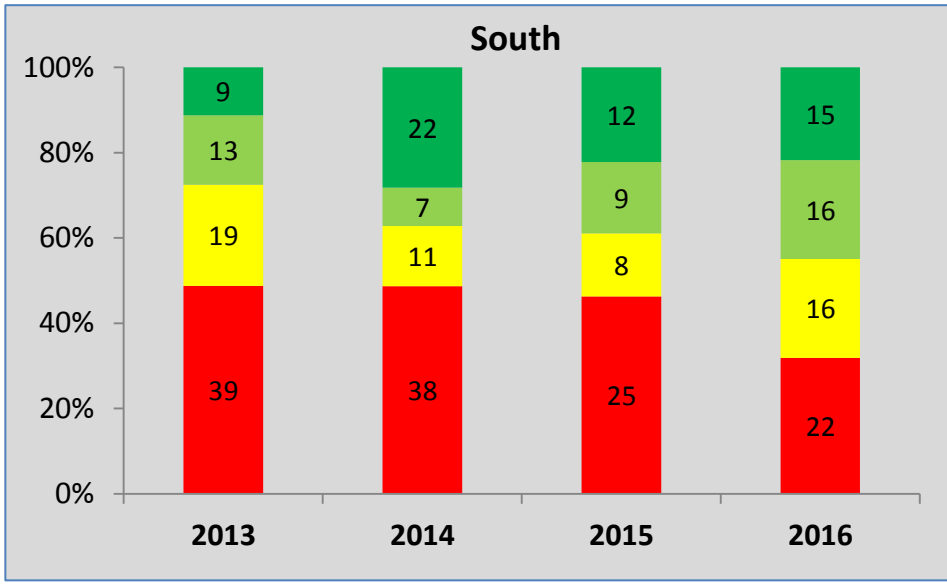
# Contacts of AFP cases, Somalia, 2016

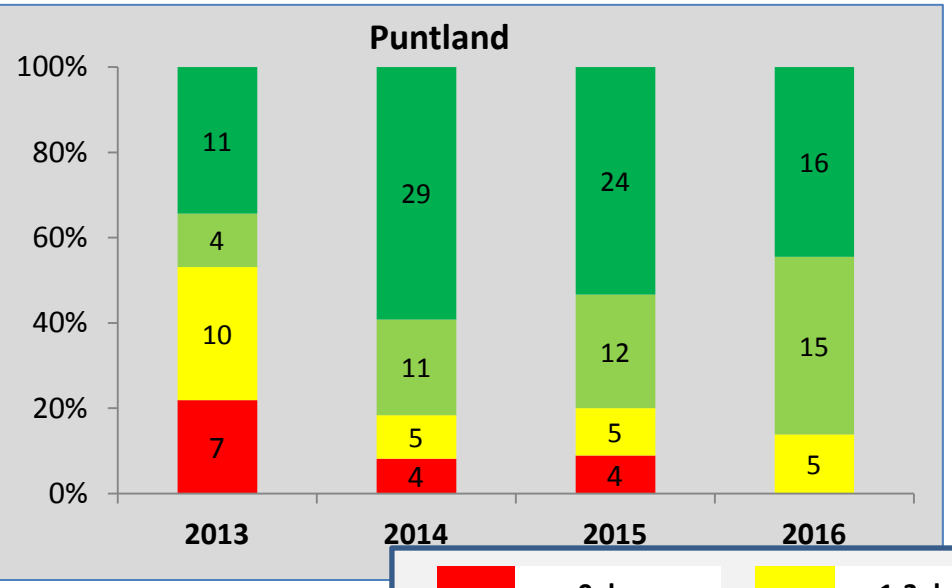
| ZONE | # AFP cases | # CONTACTS | # Contact samples with Lab result | Average contacts per cases | < 5 age contacts | Contact collected within 7 days of AFP notified | # Contact with stool in Good Condition | # Contact pending lab results | # specimens with NPEV isolated | % Specimens with NPEV Isolated | # Contacts with sabin virus isolated | % contacts with Sabin like virus Isolated |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Central | 112 | 336 | 326 | 3 | 89% | 99% | 326 | 10 | 32 | 10% | 17 | 5% |
| Puntland | 46 | 138 | 128 | 3 | 97% | 99% | 128 | 10 | 13 | 9% | 2 | 3% |
| Somaliland | 67 | 201 | 195 | 3 | 95% | 99% | 195 | 6 | 26 | 13% | 16 | 9% |
| South | 85 | 250 | 240 | 3 | 94% | 98% | 240 | 10 | 37 | 15% | 8 | 4% |
| **Somalia** | **310** | **925** | **889** | **3** | **93%** | **99%** | **889** | **36** | **108** | **12%** | **43** | **5%** |

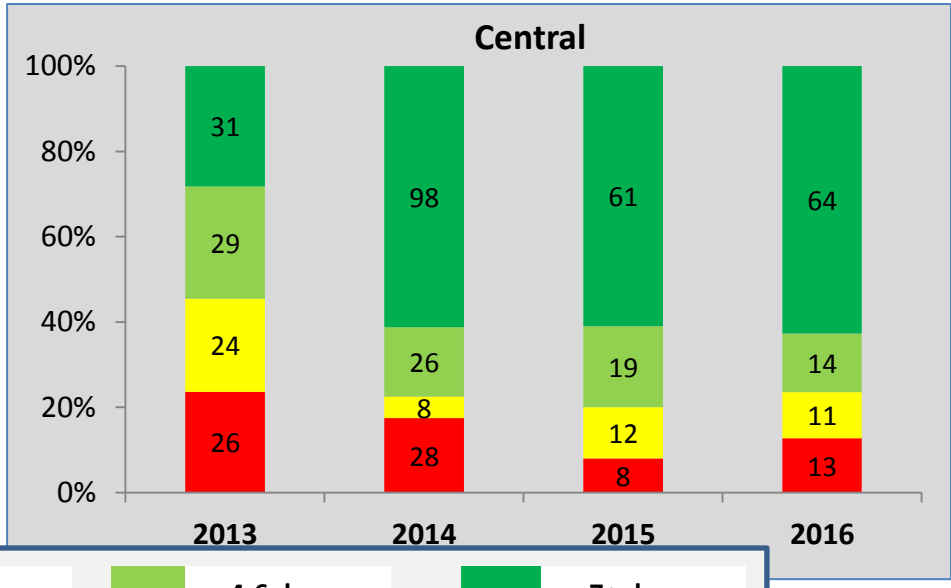
*Note: Three specimen is collected per each contact case*

# Immunity Profile of NP-AFP Cases, Age 6-59 Months, by Zone, Year 2013 - 2016 – Somalia



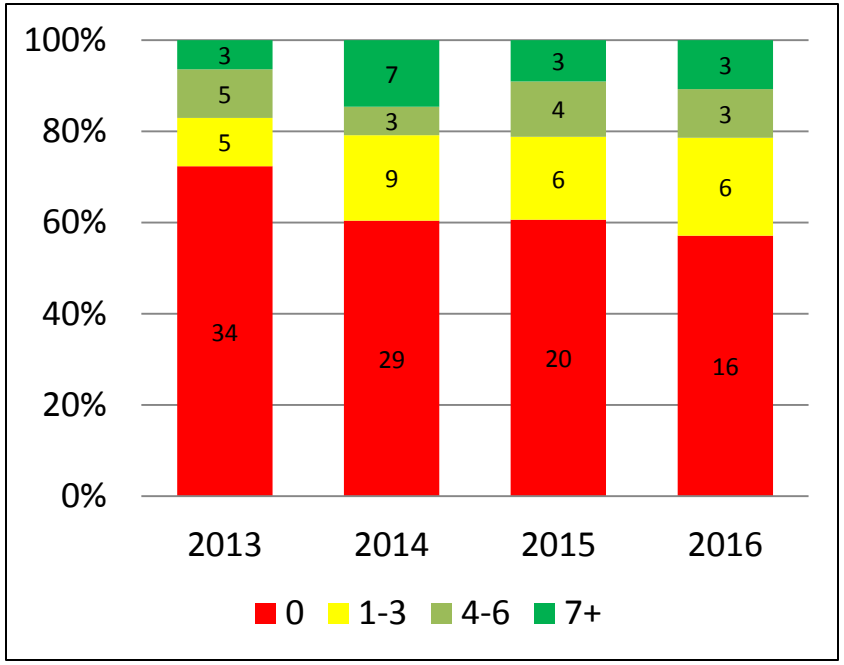



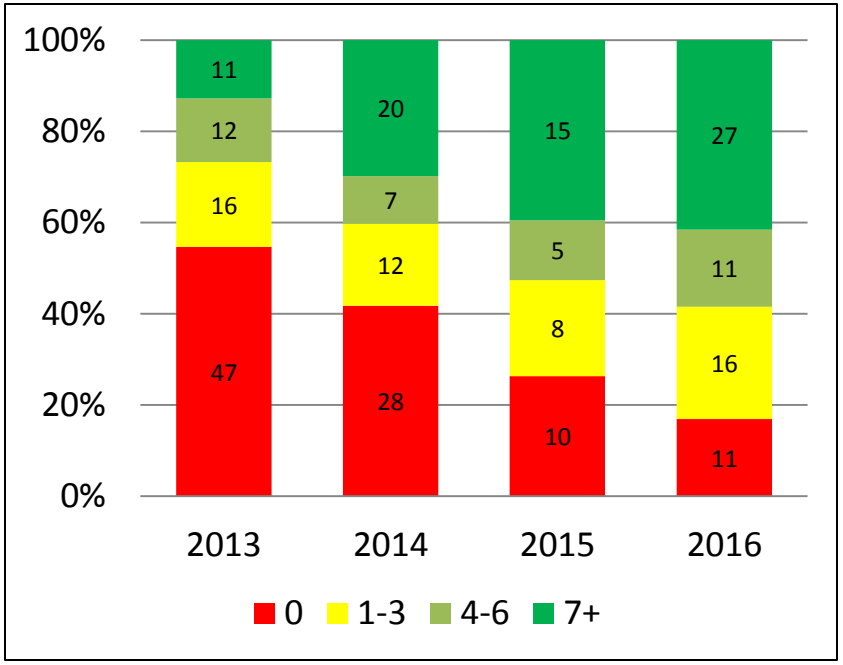




# Immunity Profile of NP-AFP Cases, Age 6-59 Months, by partially/inaccessible areas, Year 2013 - 2016 – Somalia

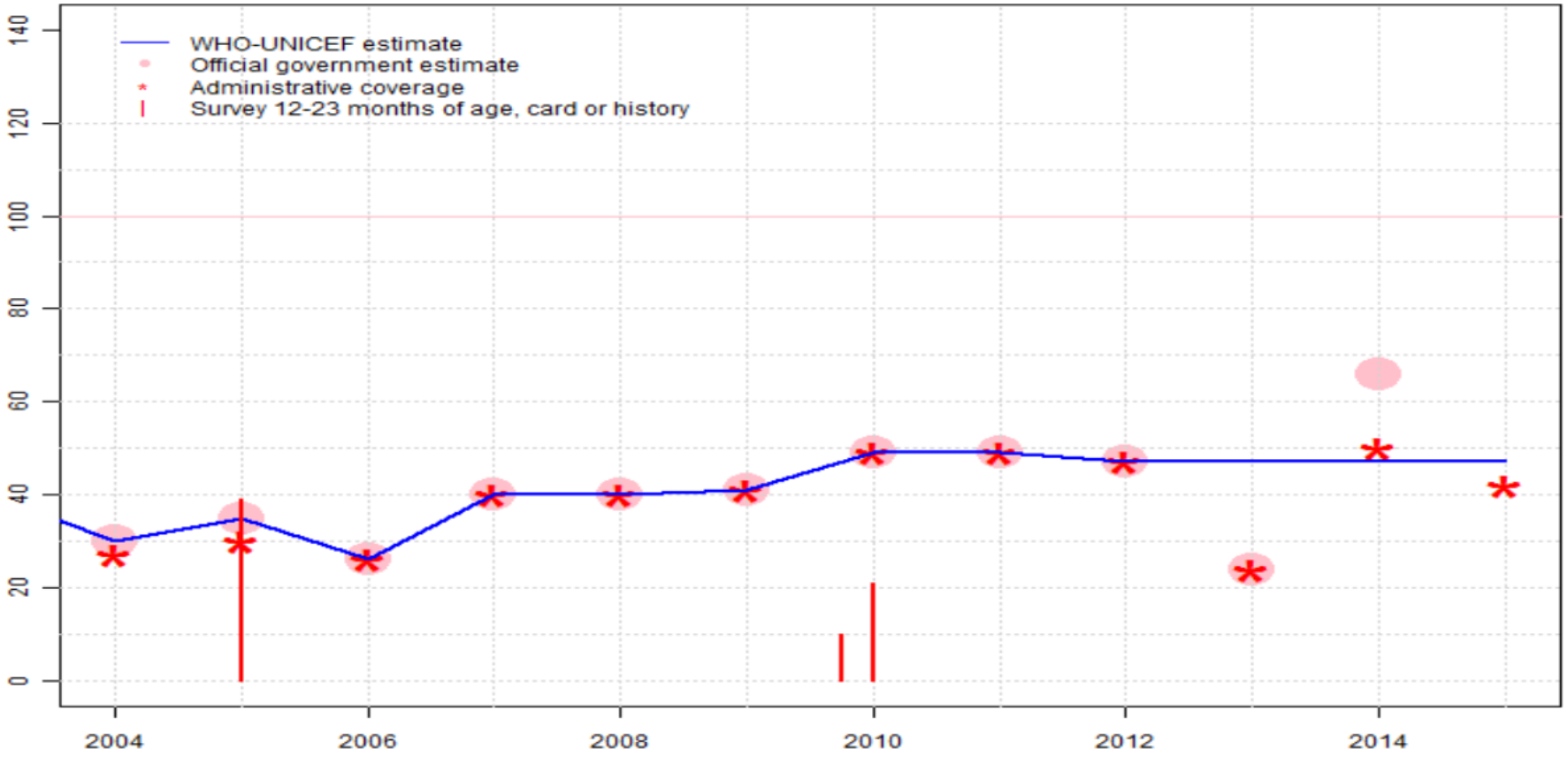
**Inaccessible**




**Partially Accessible**



# WHO-UNICEF estimates of routine OPV3 coverage, Somalia




| | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Estimate | 30 | 35 | 26 | 40 | 40 | 41 | 49 | 49 | 47 | 47 | 47 | 47 |

# Number of SIAs Rounds Conducted, 2014 - 2016 – Somalia

| | 2014 | 2015 | 2016 |
|---|---|---|---|
| NIDs | 7 | 5 | 4 |
| SNIDs | 2 | 2 | 0 |
| HtR | 1 | 3 | 2 |
| CHDs | 2 | 0 | 0 |
| SIAD | 17 (12 Dist) | 40 (3 Dist) | 3(3 Dist) |

# Implementation of major activities 2016

| Planned | Implemented |
|---|---|
| 4 NIDs rounds<br>2 HTR rounds | 4 NIDs rounds<br>2 HTR rounds |

| | |
|---|---|
| **Recruitment and hiring of district and divisional surveillance officers.** | Done ✔ |

# Polio Risk Analysis Conclusion, 2016 - Somalia

1. AFP surveillance system sensitivity and quality:
   - Surveillance network is both facility & community-based
   - Surveillance network extends into inaccessible areas
   - System appears **sensitive** to detect polio transmission
2. Presence of cohort of susceptible children:
   - **Yes**. Potential large cohort of susceptible children in partial /inaccessible areas; however, children have had vaccination opportunities outside campaigns as shown by the immunity profile of NP APF cases
3. Risk of:
   - Undetected polio transmission? **Low**, due to sensitive & supplementary surveillance activities implemented
   - WPV importation spread or emergence of cVDPV? **High**, due to expected cohort with immunity gap & high pop movement

# Way forward - Somalia

**1. Supplementary strategy to boost immunity of susceptible children:**

- Two NIDs rounds
- Two SNIDs rounds
- Hard To Reach (HTR) SIAs: one round (33% of national target) (target - nomads, remote pop, etc.)
- Transit Point Vaccination Teams: At entry of inaccessible areas
- Negotiated access for (polio plus) with community participation is on going.

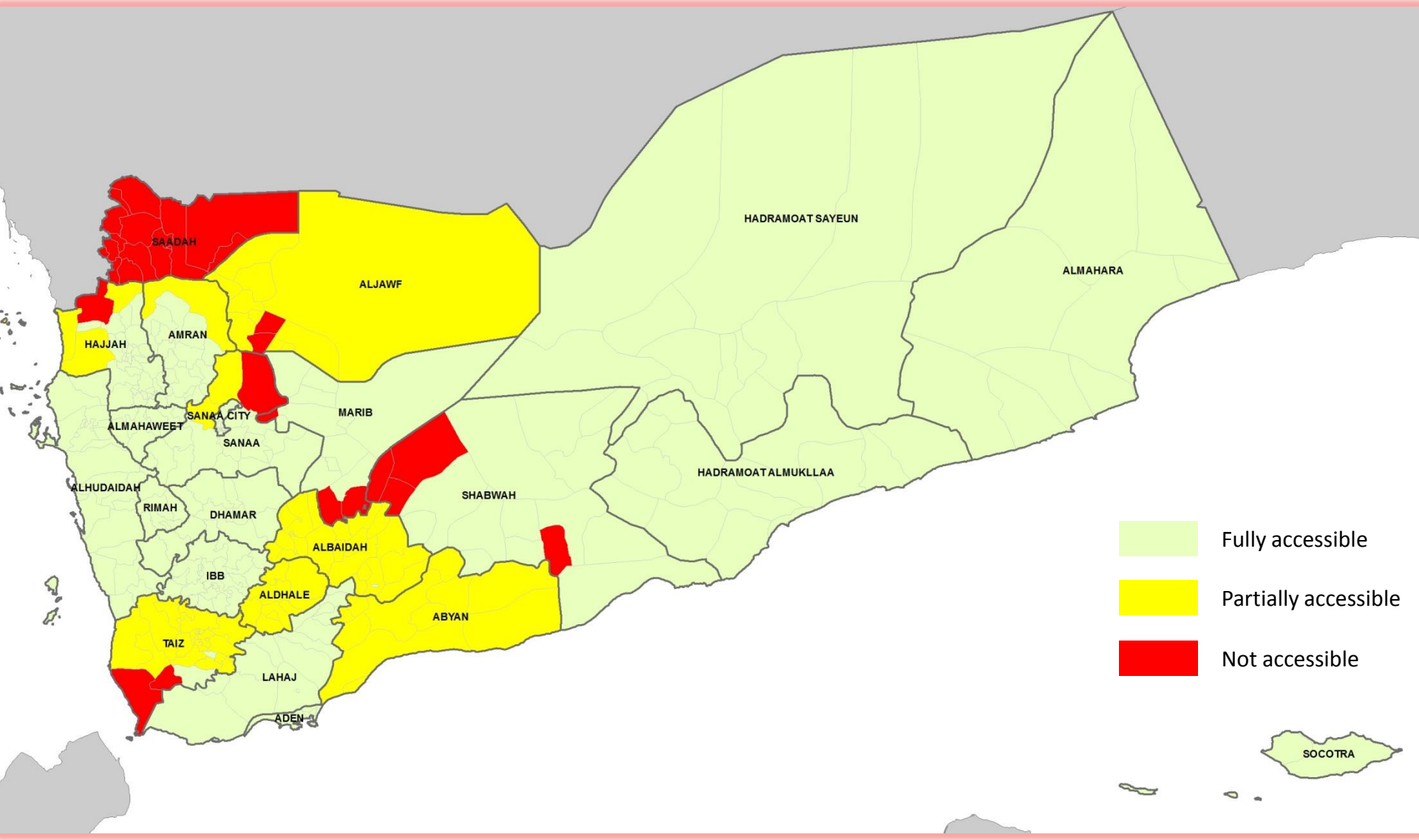
**2. Supplementary strategy to improve AFP surveillance sensitivity:**

- Community Based Surveillance (CBS – using VPVs): will continue all over the country
- Stool samples from AFP contacts (3 contacts per AFP): will continue regularly collected in all areas
- Stool samples from healthy kids: will continue collected in silent areas
- Environmental Surveillance: Planned to start in 2017

# Yemen

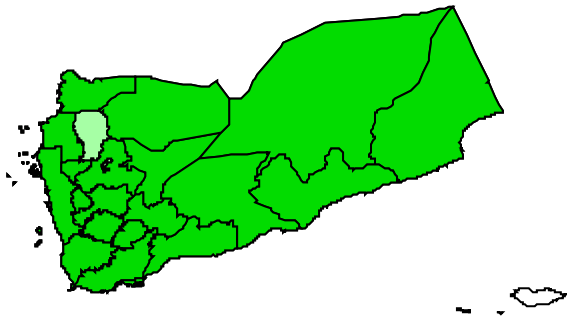
December 2016

# Yemen Accessibility map, 2016



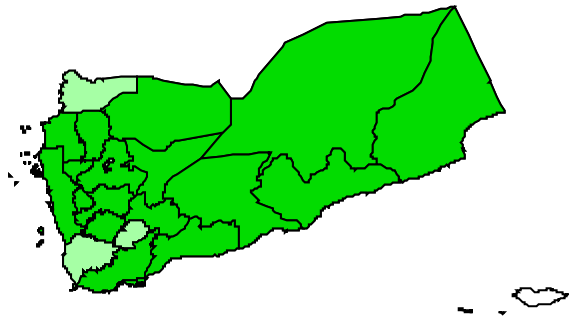
# Key Surveillance indicators at Provincial level, Yemen 2014-2016

2014



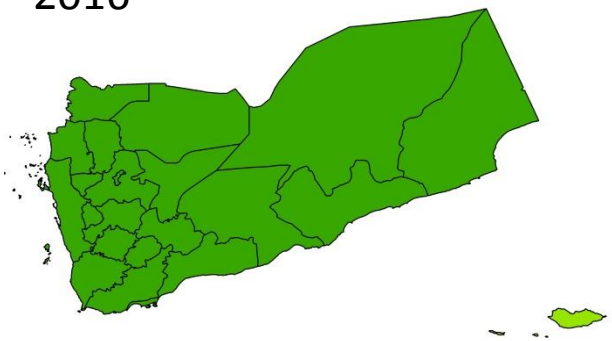
Amran, Socotra

2015

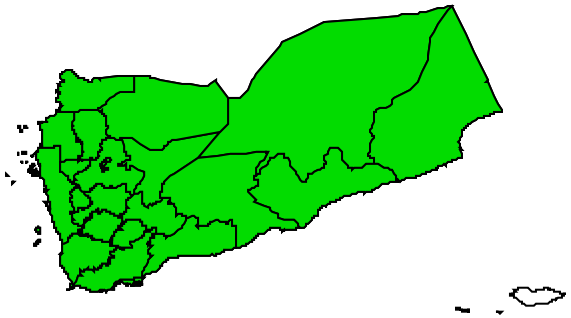


Saadah, Sanaa city, Aldhale, Taiz, Socotra

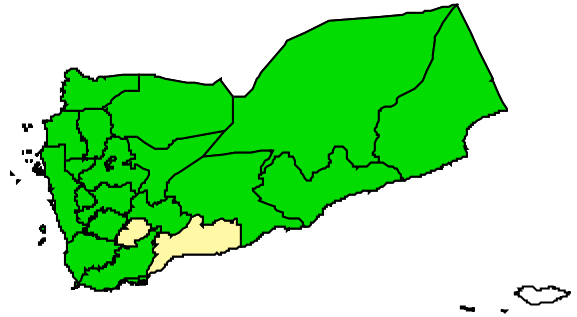
2016



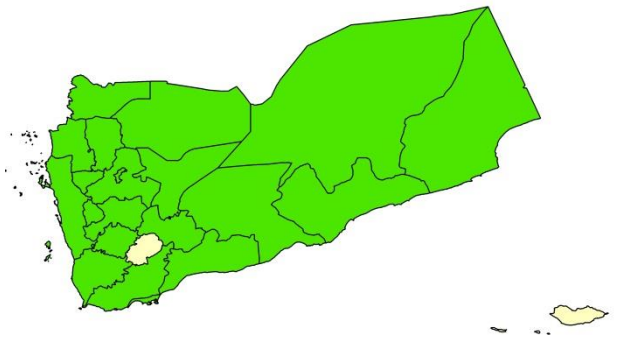
**NP AFP rate** <1 1-<2 2-<3 3+



Socotra



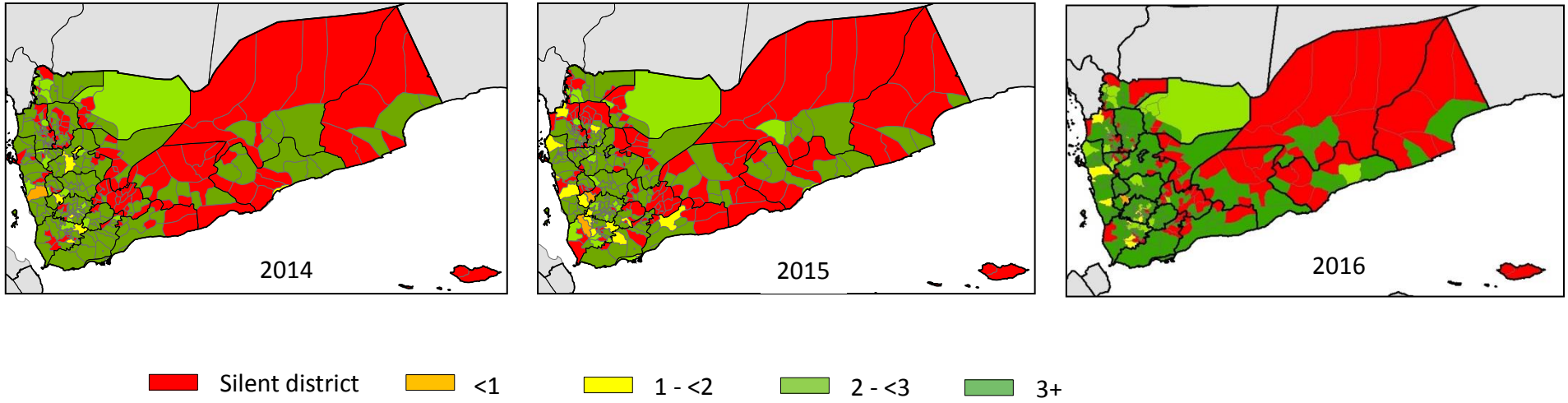
Aldhale, Abyan, Socotra

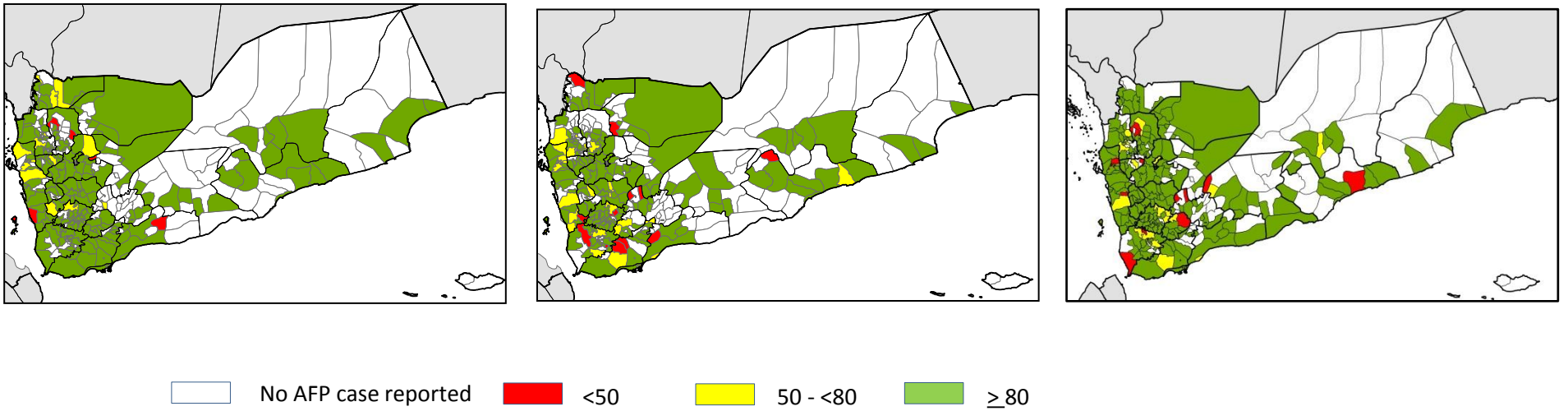


Aldhale, Socotra

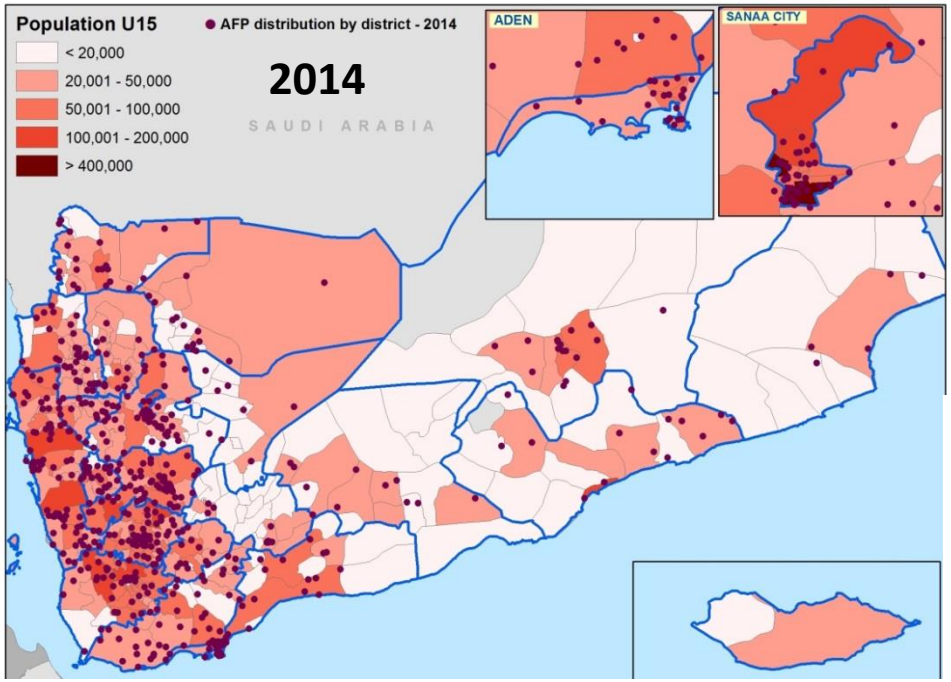
**Stool Adequacy rate** <50 50-<80 80+

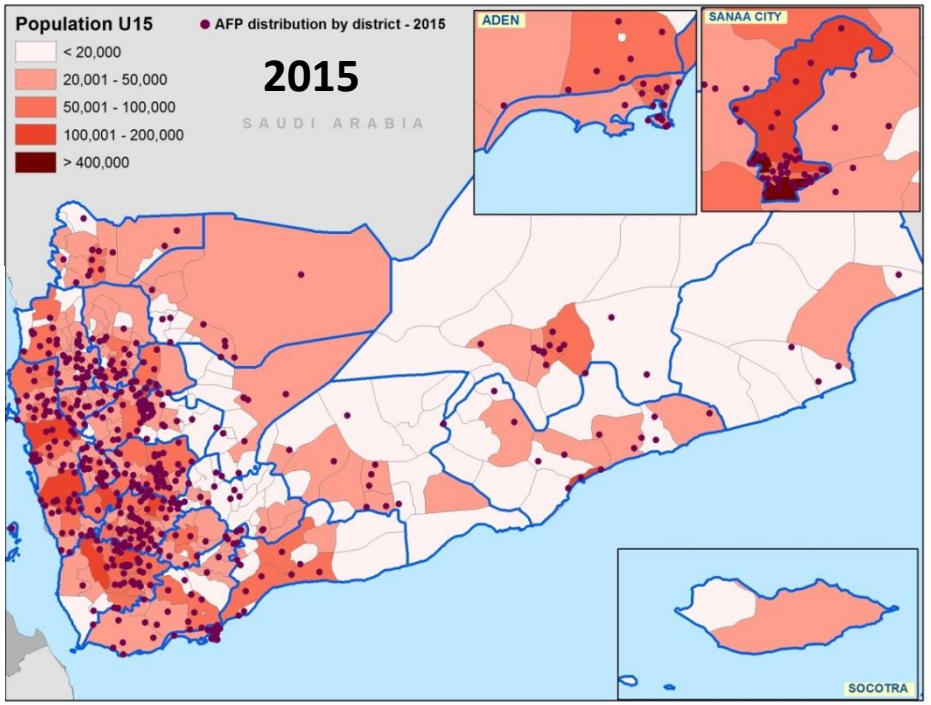
# Key Surveillance indicators at district level, Yemen 2014-2016

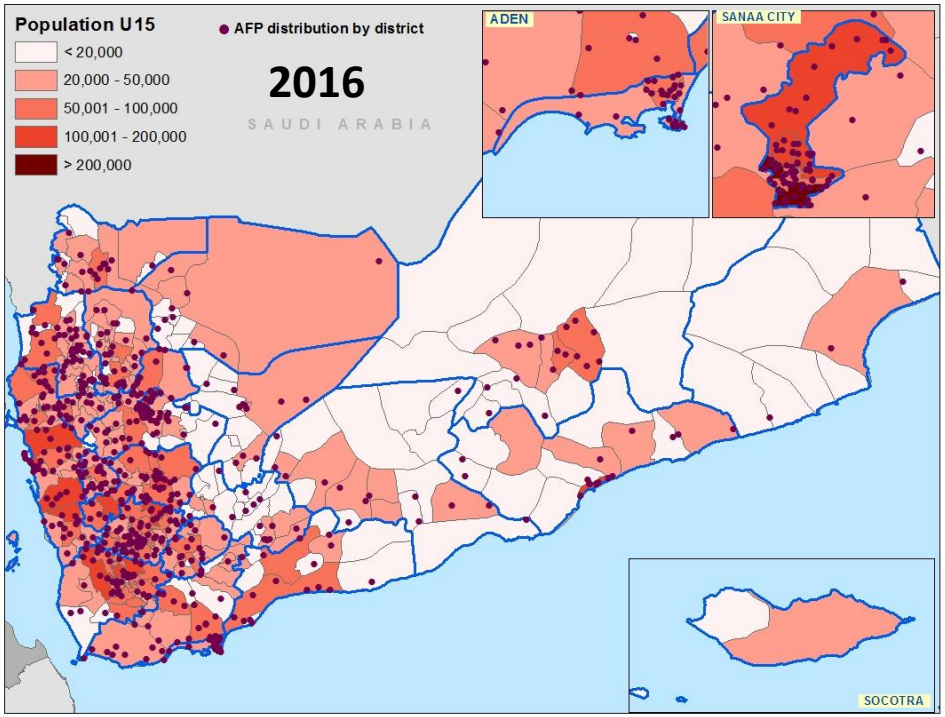


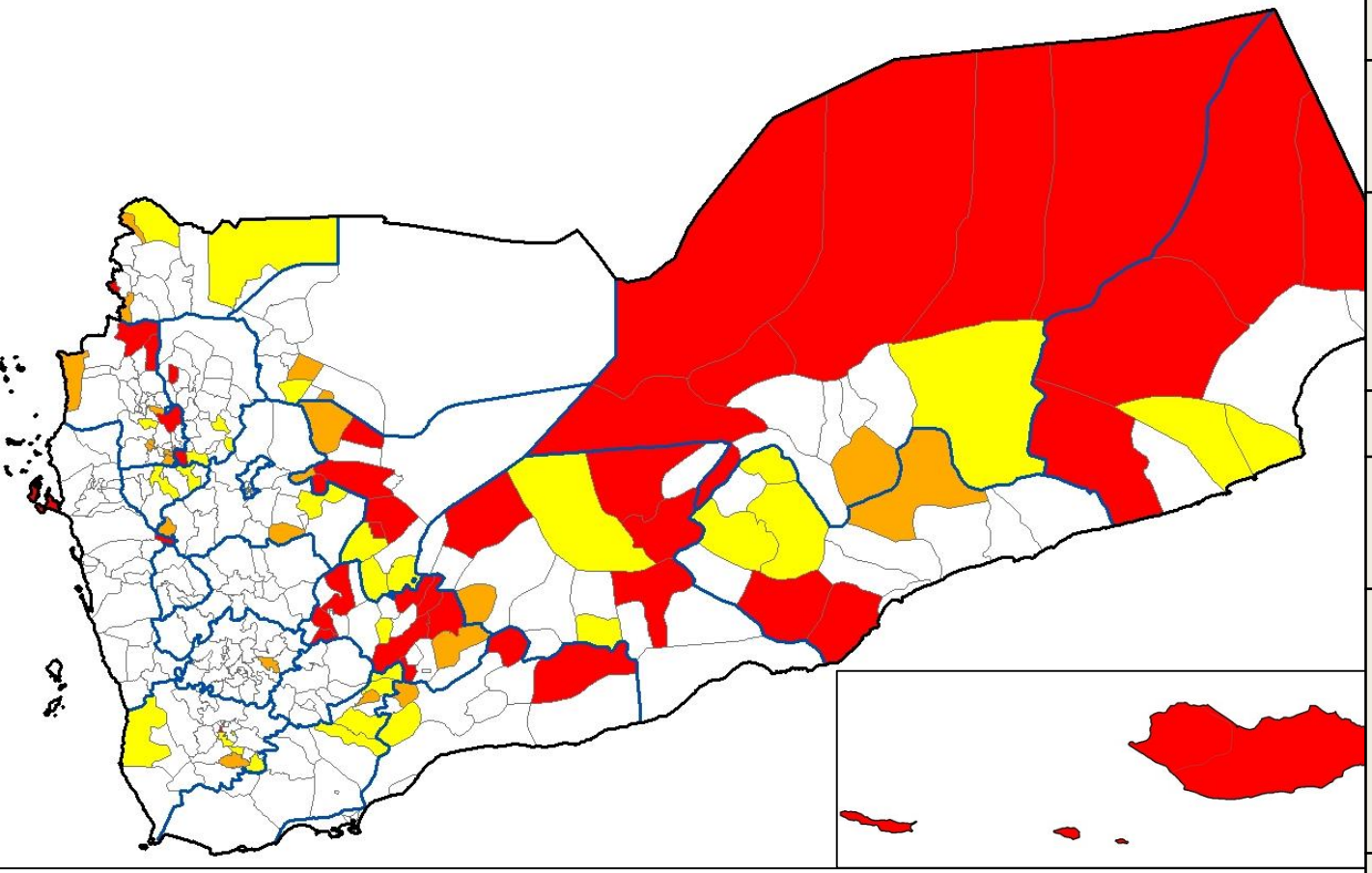
# Distribution of NP-AFP case & Pop. under15 by district, Yemen, 2014 - 2016



# Silent Districts by year (2014-2

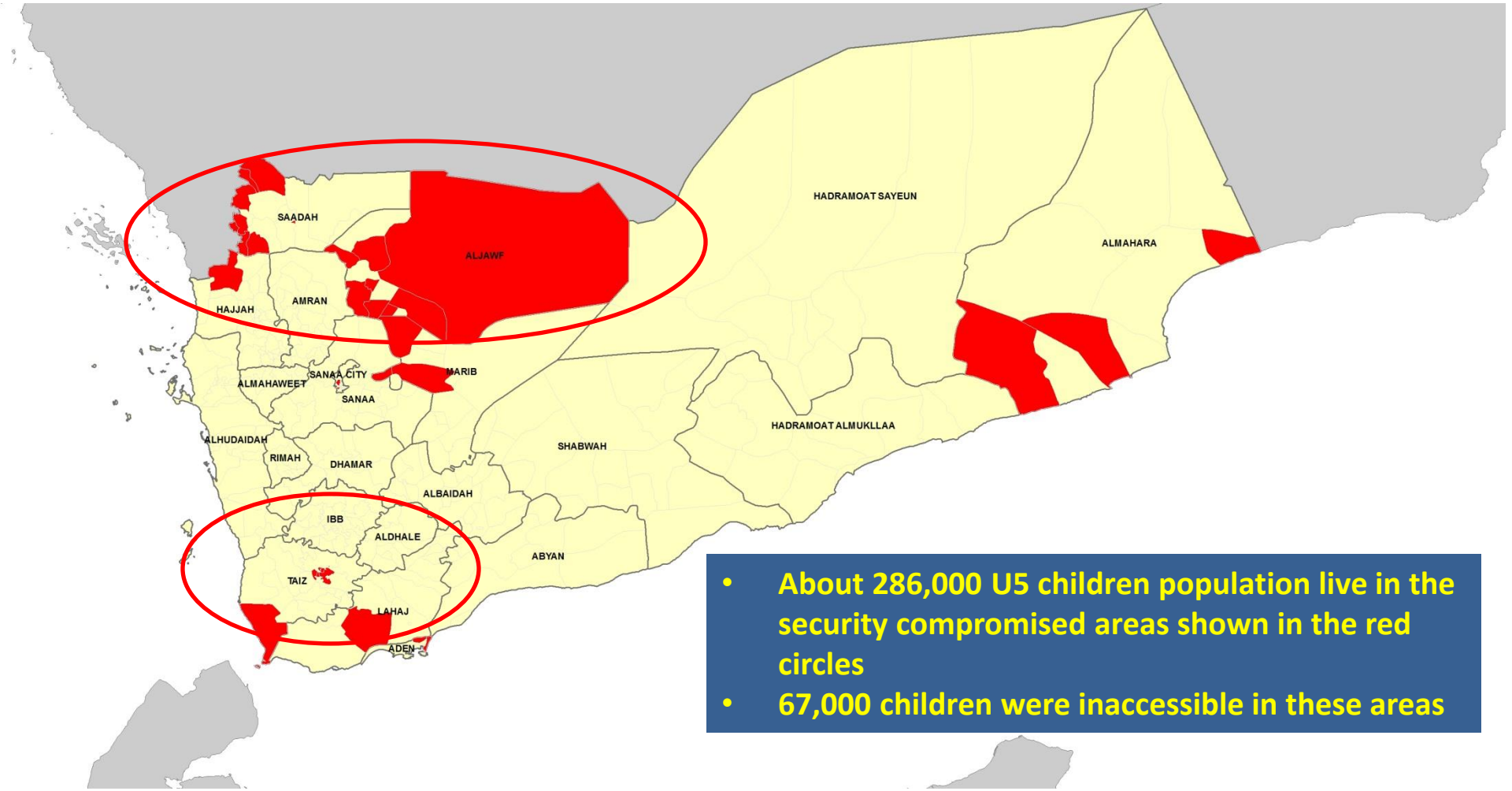


Silent for 2014-2016
Silent for 2015-2016
Silent for 2016
Reported 1 AFP case at least for 2016

| | # silent district out of 333 | Population under 15 years |
|---|---|---|
| 2014 | 115 (35%) | 2,116,112 (17%) |
| 2015 | 129 (39%) | 2,562,865 (20%) |
| 2016 | 95 (29%) | 1,549,751 (12%) |
| 2014-2016 | 44 (13%) | 474,165 (4%) |

| Province | DISTRICT | Pop 2016 |
|---|---|---|
| ALBAIDAH | ALARSH | 26,982 |
| | ALSAWMAA | 25,869 |
| ALMAHAWEET | ALTAWELAH | 37,012 |
| | ALMAHAWEET | 31,985 |
| AMRAN | REIDAH | 33,149 |
| | THE'LLA | 28,964 |
| | MASWER | 27,267 |
| HADRAMOAT ALMUKLLAA | SAEIF(DUAN) | 28,078 |
| HAJJAH | ALMAGHRIBAH | 41,913 |
| | BENI ALAWAM | 33,971 |
| LAHAJ | LEBOUS | 46,485 |
| | ALHADD | 33,202 |
| | RADFAN | 27,303 |
| | HEBEIL JABR | 25,553 |
| SAADAH | KITAF WA BUGA | 29,008 |
| TAIZ | ALMOUWASIT | 70,079 |
| | ALMISRAKH | 60,763 |
| | HIFAN | 45,726 |
| | ALMUKHA | 38,057 |
| | SAMEA | 25,235 |

# Districts with <80% SIAs Admin Coverage in >3 Out of Last 4 SIAs, 2015 – 2016, Yemen

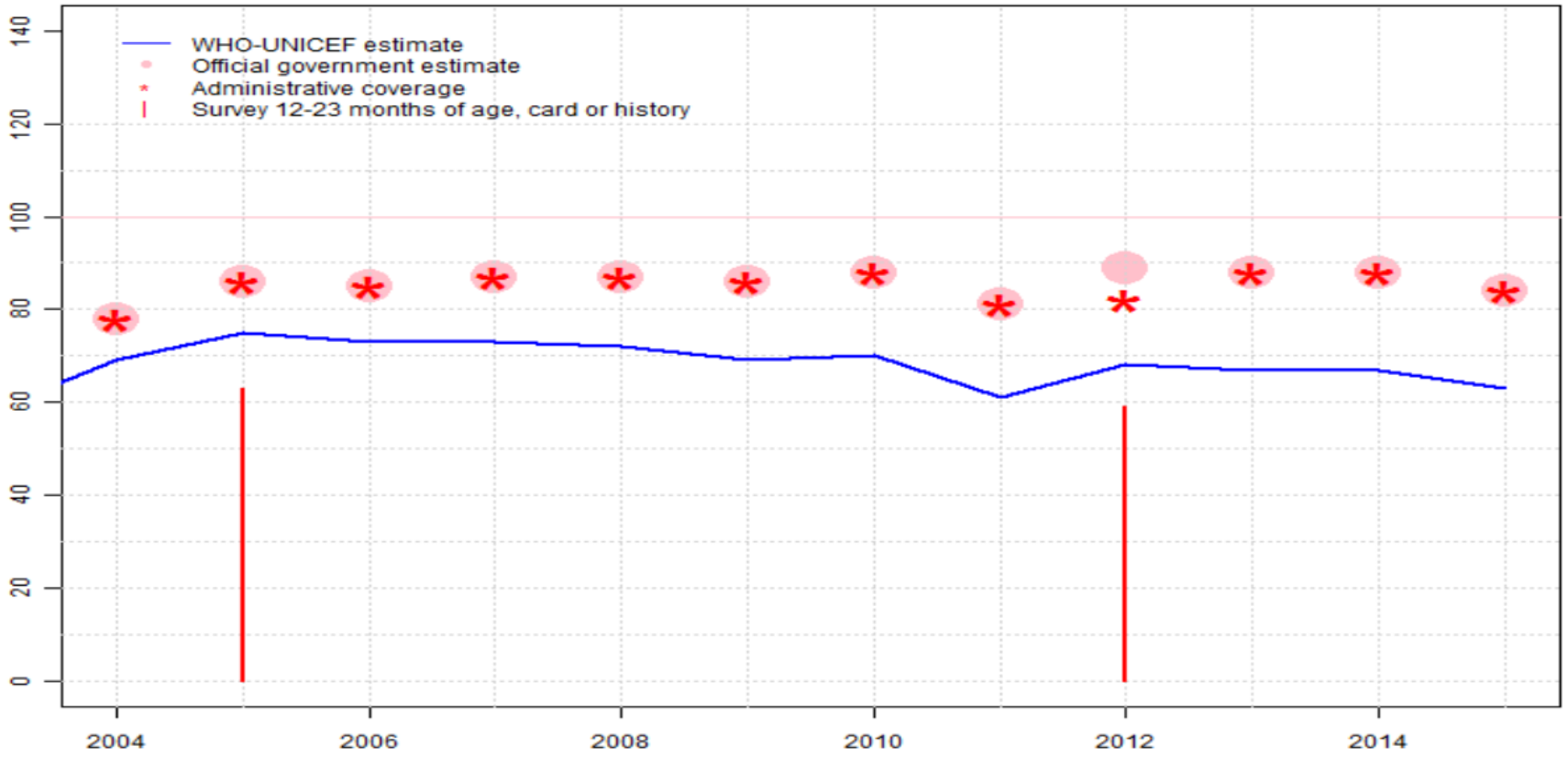



- About 286,000 U5 children population live in the security compromised areas shown in the red circles
- 67,000 children were inaccessible in these areas

3+ / 4 campaigns with less than 80% (35) – 11% of 333 districts → Population*: **2.6 million** / Under 5: **416,000**

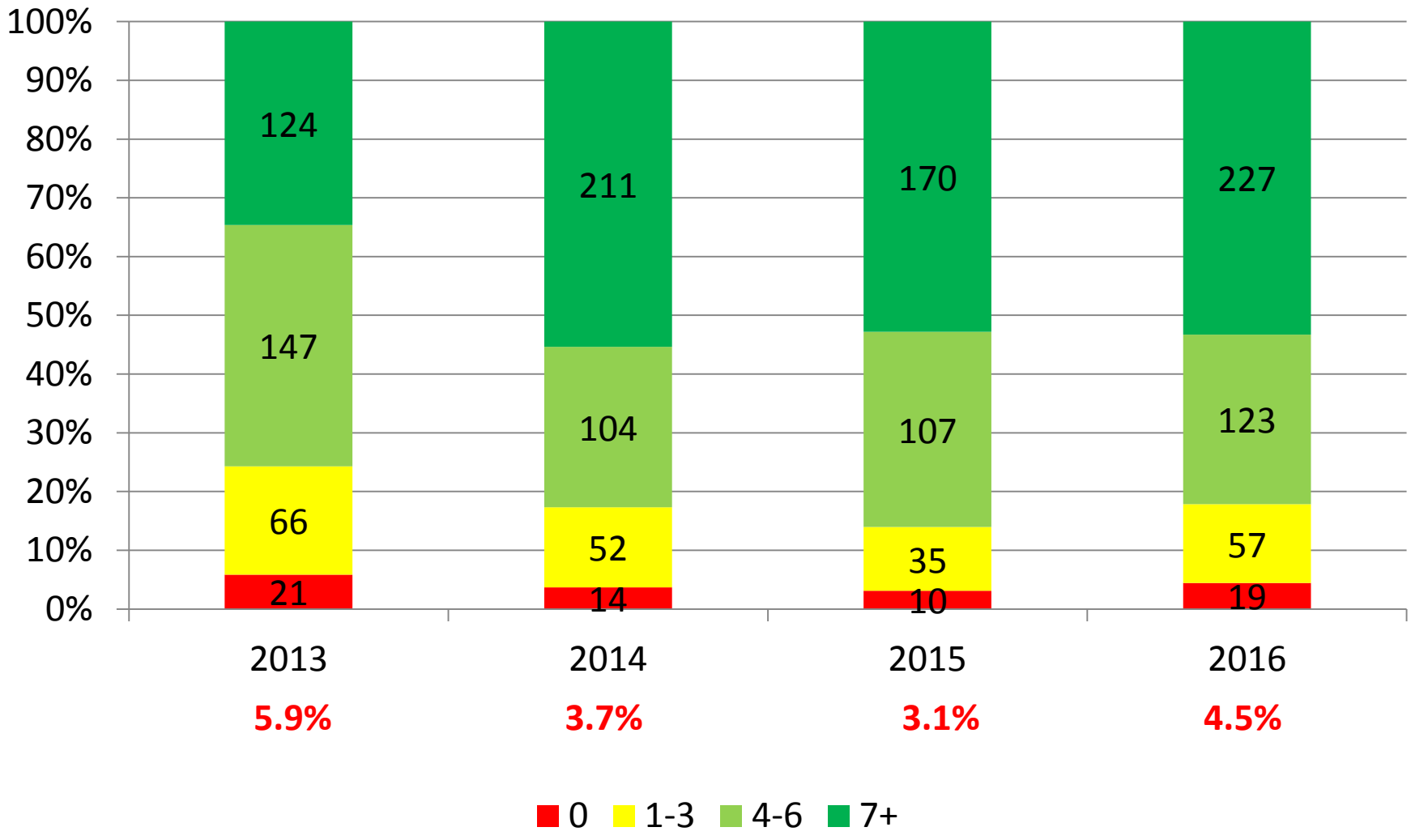
Other districts

# WHO-UNICEF estimates of routine POL3 coverage, Yemen

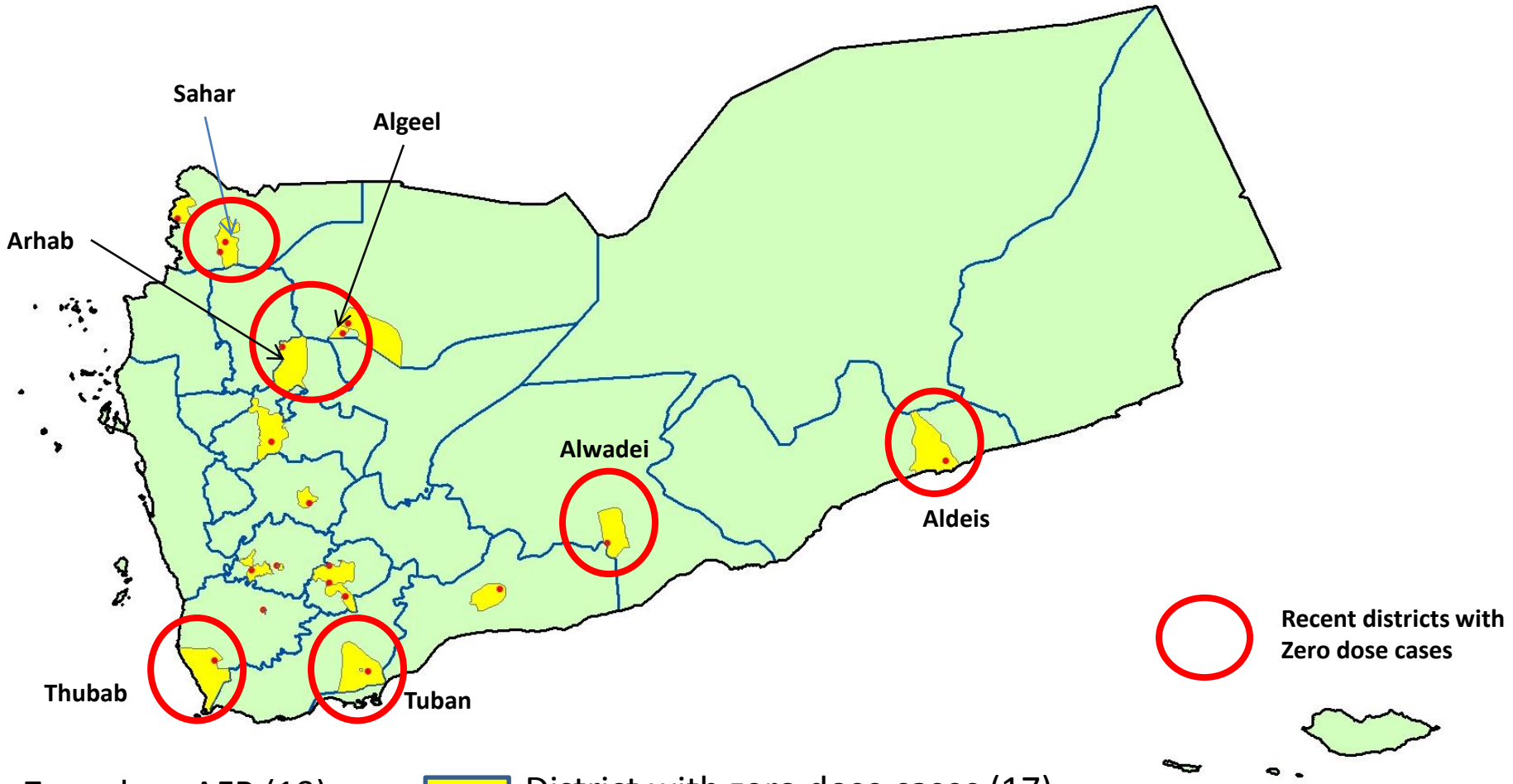



| | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Estimate | 69 | 75 | 73 | 73 | 72 | 69 | 70 | 61 | 68 | 67 | 67 | 63 |

# Vaccination status of NP AFP 6-59 months, Yemen 2013-2016



# Zero dose AFP Cases, Aged 6-59 months, 2016, Yemen



# Implementation of planned activities 2016

| Planned | Implemented | Postponed |
|---|---|---|
| 4 NIDs | 2 NIDs | **2 due to insecurity** |

**Low performance surveillance indicators at district level:**

- **59% of districts achieved certification standard NPAFP rate and percent of adequate stools;**
- **27% have not achieved the target for both indicators;**
- **14% achieved one of the two key indicators.**

| | |
|---|---|
| **Surveillance refresher training** | Done ✔ |
| **Case investigation** | Done ✔ |
| **Active AFP surveillance** | Done ✔ |
| **District technical meeting** | Done ✔ |

# Conclusion - Yemen

1. **AFP surveillance system sensitivity and quality:**
   - **Medium sensitivity** due to significant number of silent districts (although many silent district have very small populations) & half of districts are not achieving the certification standard ( NP AFP rate & Stool adeq.)

2. **Presence of cohort of susceptible children:**

   **Yes**. About 76,000 children not vaccinated since August 2015 in 2 districts;

   over 400,000 children live in low performing areas (not achieved at least 80% in 3 out of last 4 rounds) There is an increase in the zero dose from 4.5 to 6.5 % which can be explained by the fact that there was no NIDs since April and Routine Immunization is very weak due to the conflict situation.

3. **Risk of,**
   - Undetected or delayed detection of polio transmission: **Low to Medium** due to medium surveillance system sensitivity.
   - WPV Importation, spread & emergence of cVDPV: ***Medium to high*** due to potential cohort of susceptibles & pop movement

# Way Forward - Yemen

1. **Supplementary strategy to boost immunity of susceptible children:**
   - Two NIDs rounds in the first semester of 2017.
   - Hard To Reach/security compromise (HTR) Special SIAs;
   - Integrated outreach activities
   - Transit Point Vaccination Teams.

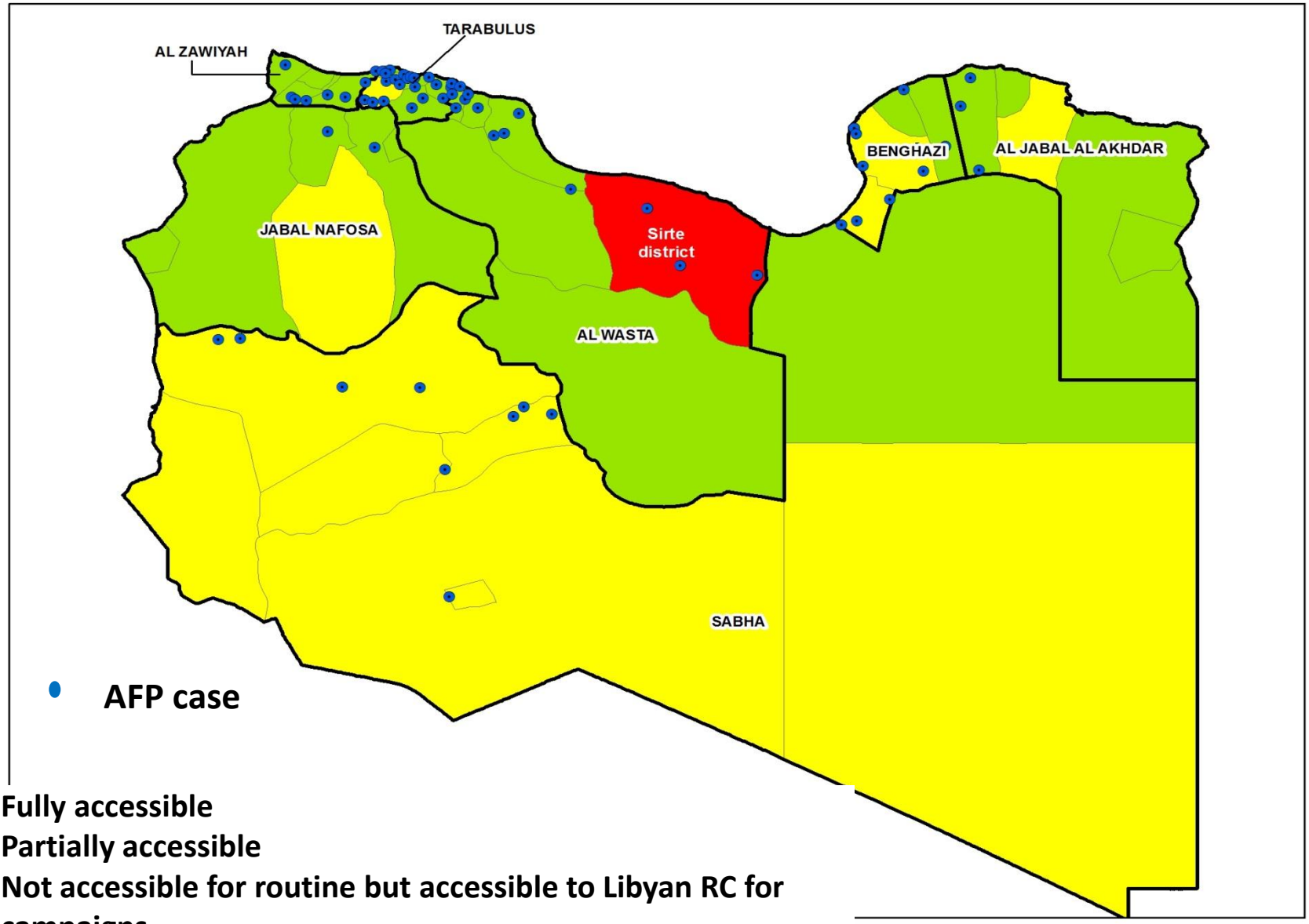
**2. Supplementary strategy to improve AFP surveillance sensitivity:**

   - Community Based Surveillance (CBS using VPV)
   - Stool samples collected from healthy kids in silent areas
   - Environmental Surveillance: Planned to start in 2017

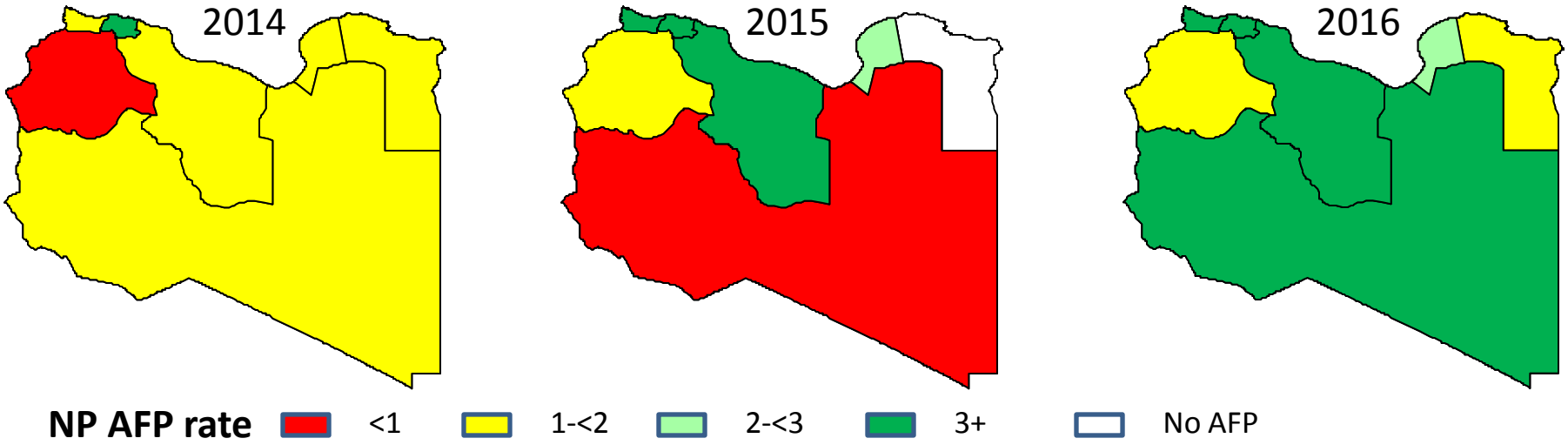
# Libya

## 1/1/2017

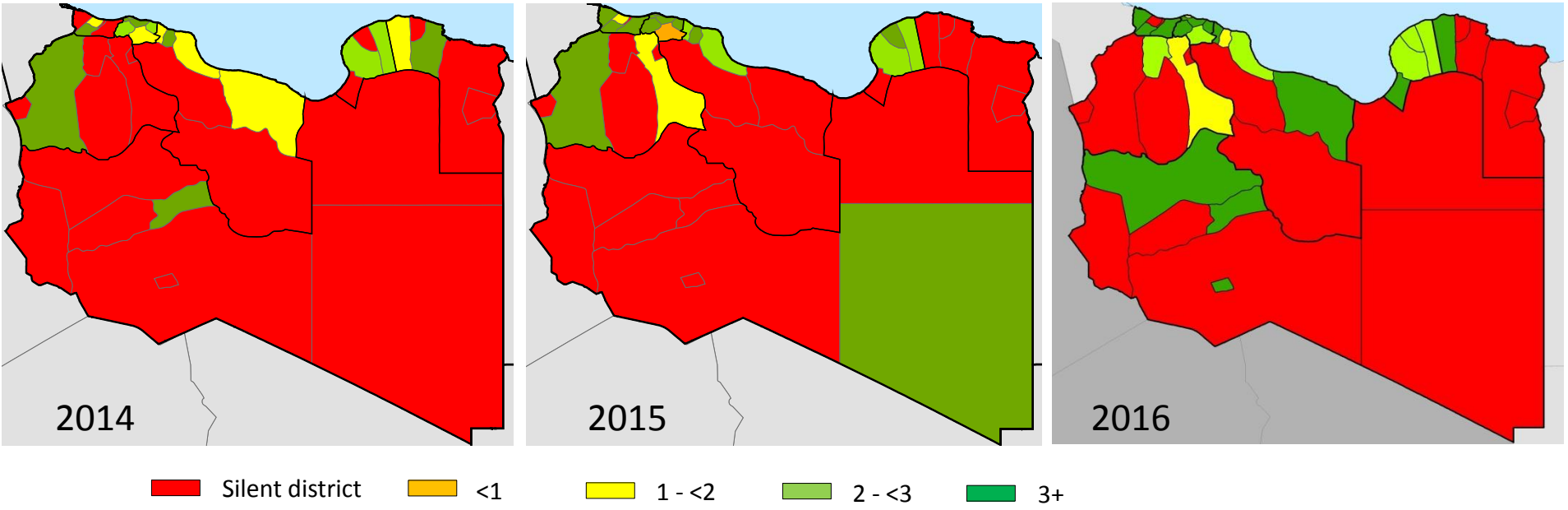
# Distribution of AFP cases according to accessibilitv. Libva 2016

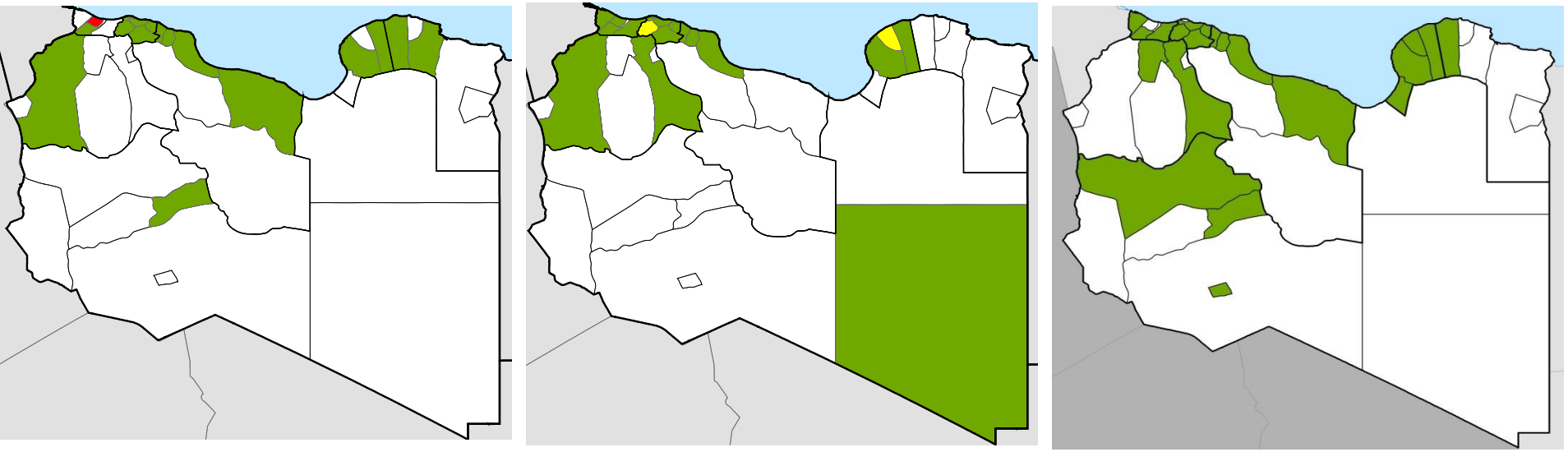


# Key Surveillance indicators at Provincial level, Libya 2014-2016

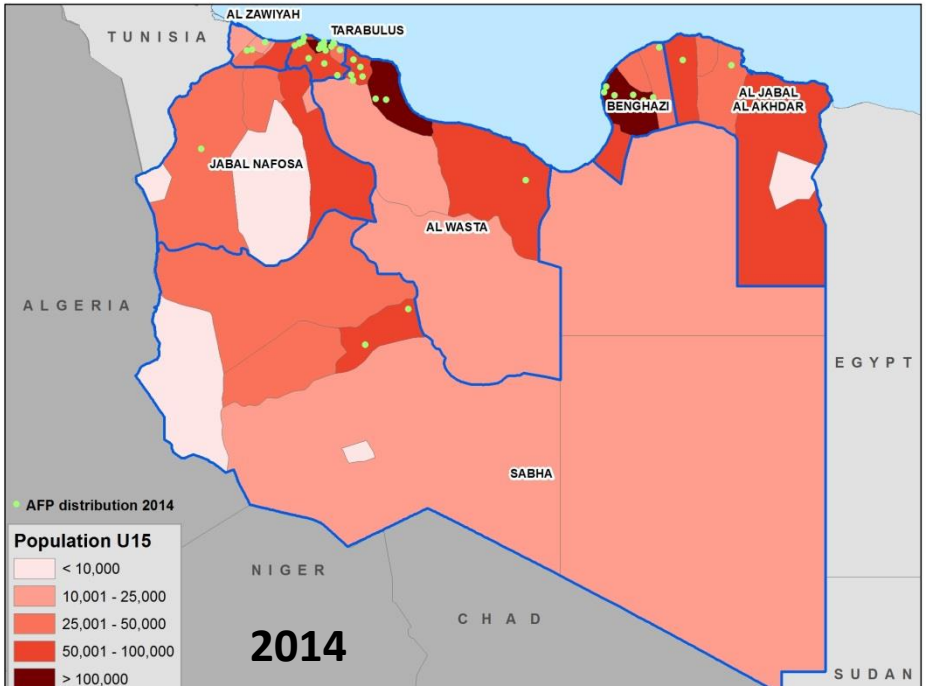


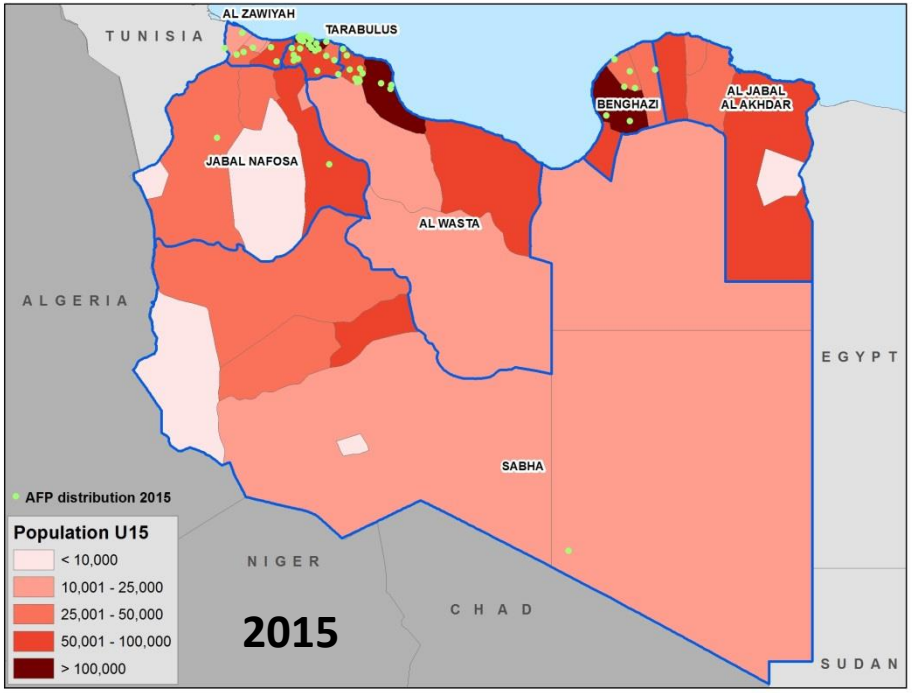

# Key Surveillance indicators at district level, Libya 2014-2016

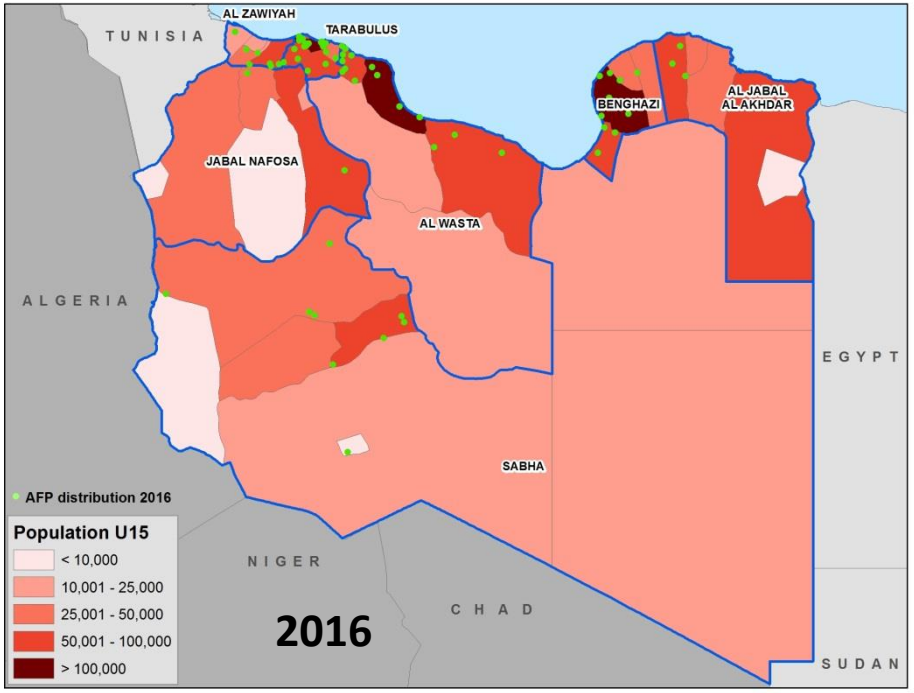


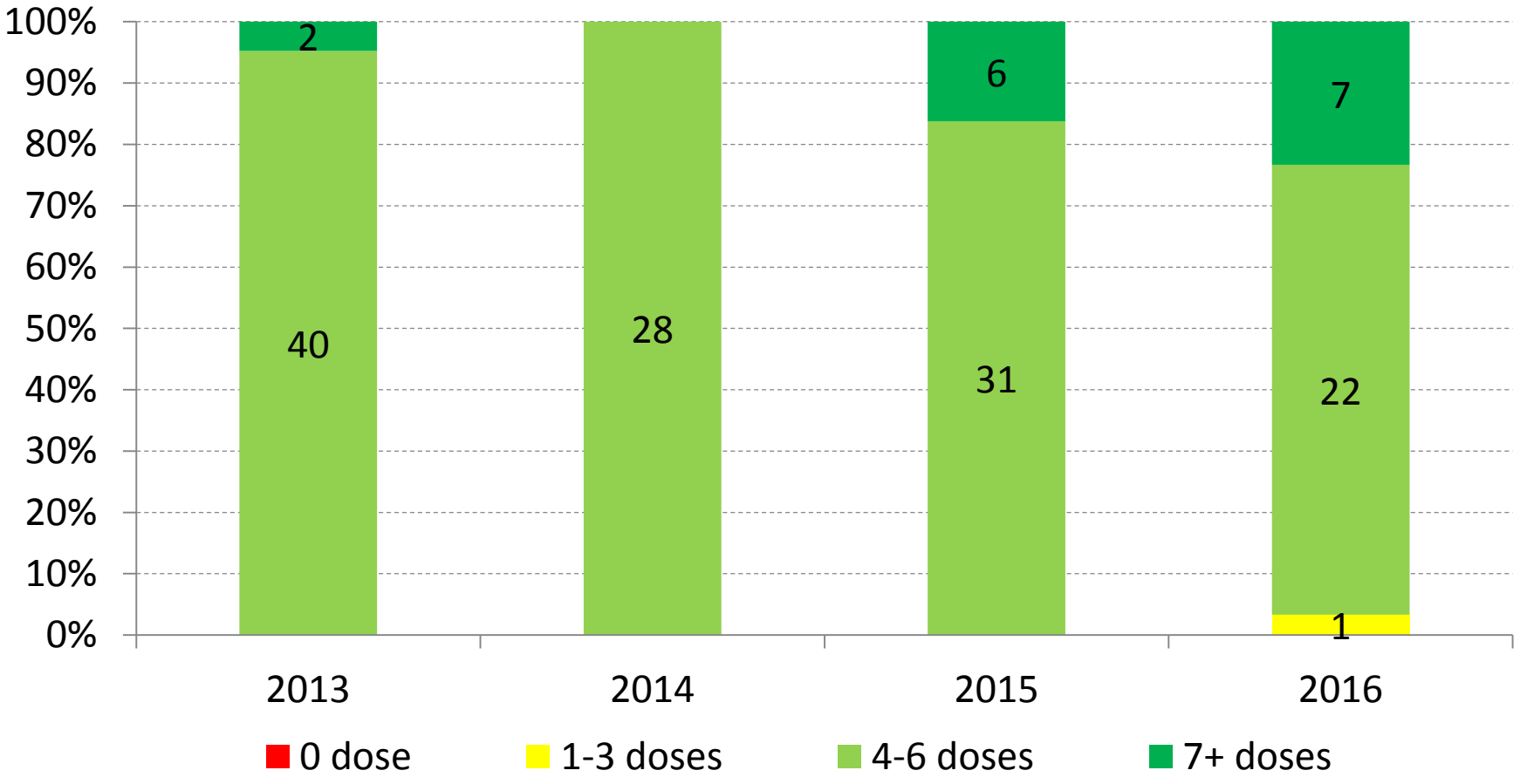
# Distribution of NP-AFP & Pop. Under15 by district, Libya, 2014 - 2016



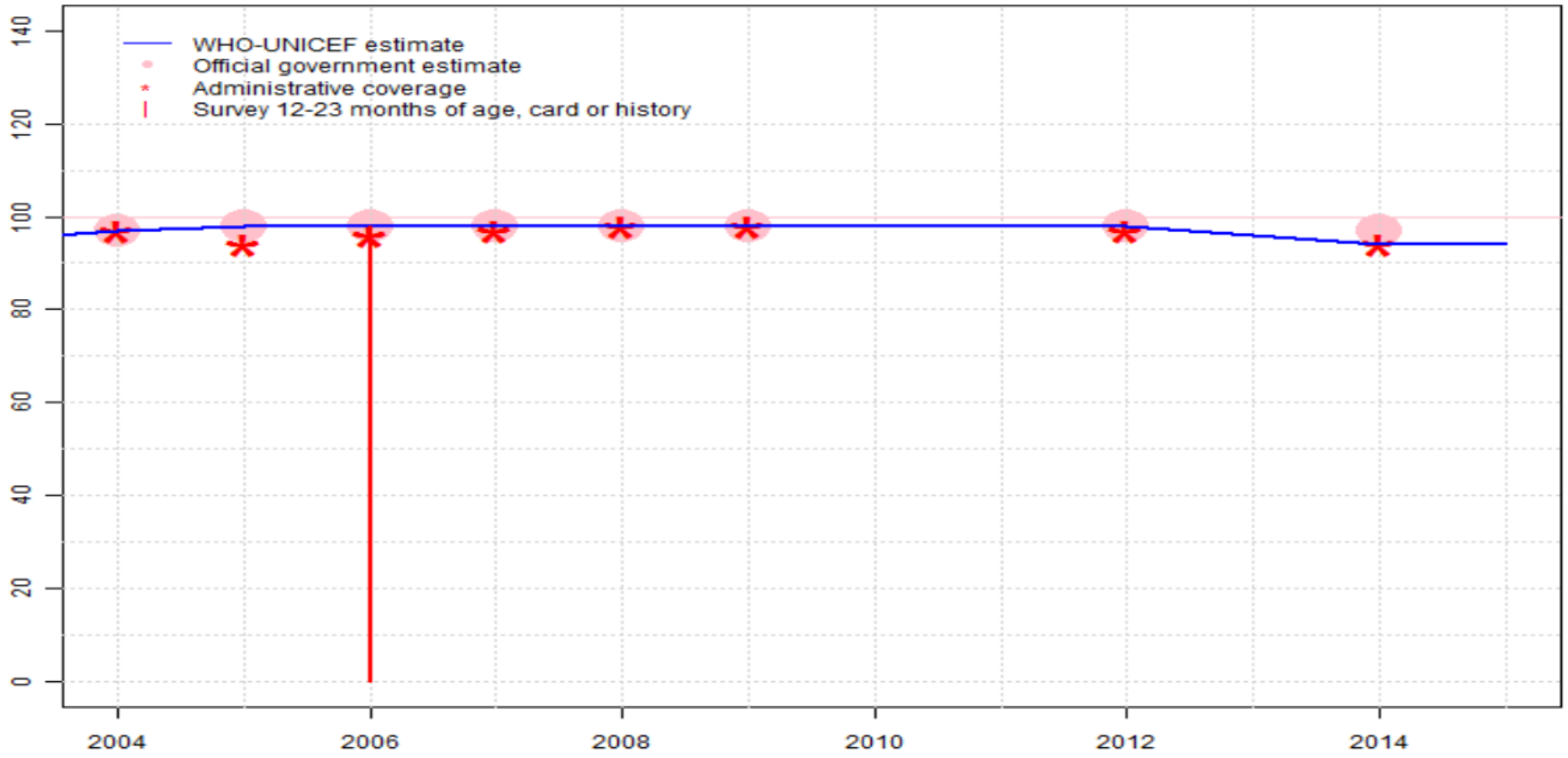



# Vaccination status of NP-AFP Cases, Age 6-59 Months, Year 2013 - 2016 – Libya



# WHO-UNICEF estimates of routine POL3 coverage, Libya




| | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Estimate | 97 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 96 | 94 | 94 |

# Implementation of planned activities 2016

| Planned | Implemented |
|---|---|
| 2 NIDs | 2 NIDs |

| | | |
|---|---|---|
| **Development of National Surveillance Plan** | Done ✔ | We had final review and adopted the document with global guideline. |
| **Revise and update Libya AFP surveillance Manual** | Done ✔ | Distributed to all regions of Libya including conflict areas. |
| **Outbreak preparedness & response plan** | Done ✔ | |
| **Training of surveillance officers on new SOPs** | Done ✔ | |
| **Implement POSE** | Done ✔ | |

# Conclusion

1. **AFP surveillance system sensitivity and quality:**

   **Sensitive** however, some gaps may exist among non-Libyan groups

2. **Presence of cohort of susceptible children:**

   Libyan children are accessible in all campaigns; routine immunization coverage is high; potential gaps in migrant populations.

3. **Risk of,**
   - Undetected or delayed detection polio transmission? **Low** due to generally sensitive surveillance system
   - WPV Importation/spread or emergence of cVDPV: **Low to medium** due to potential immunity and surveillance gaps among sub-population group (Non-Libyan)

# Way forward

1. **Supplementary strategy to boost immunity of susceptible children:**

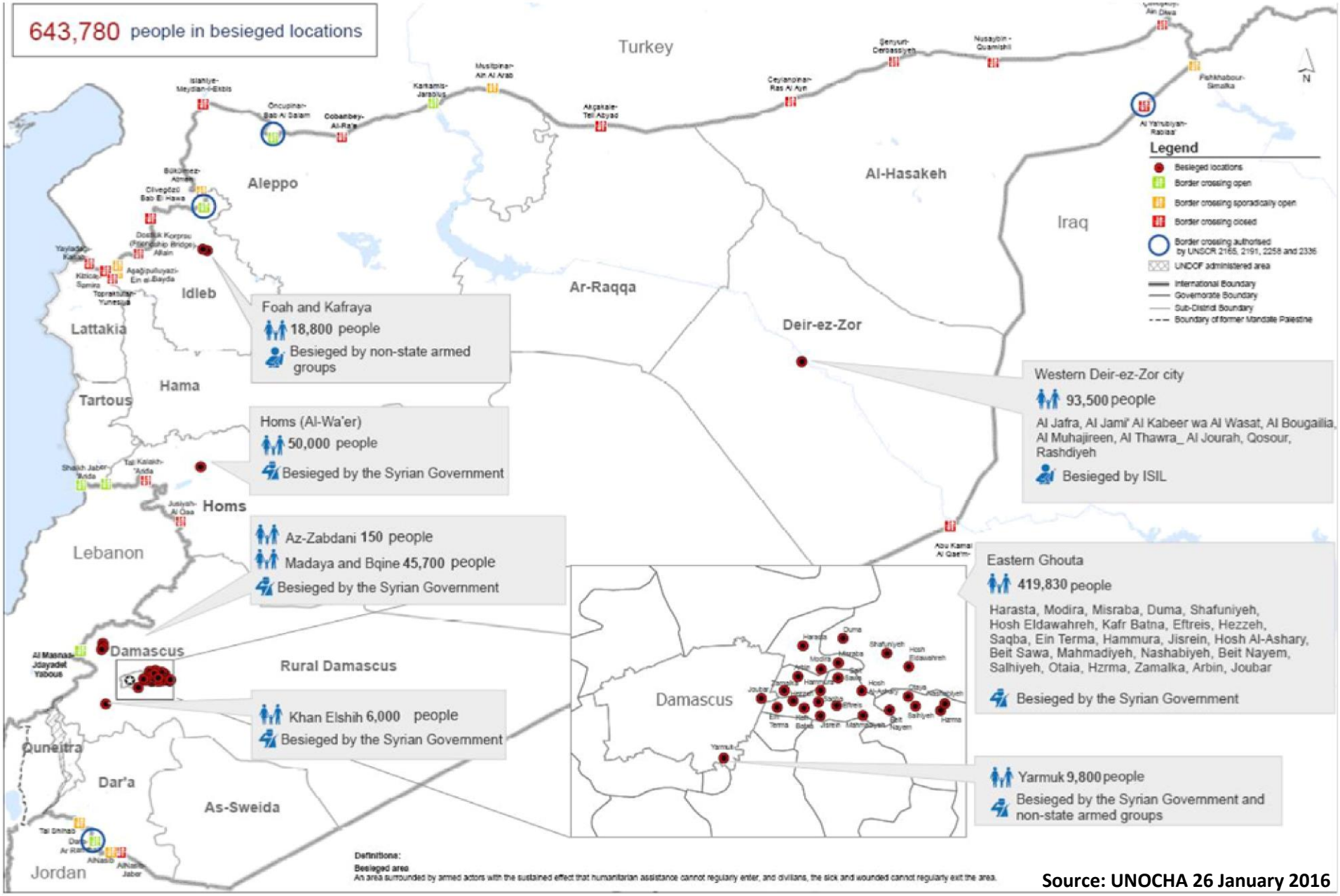
   – Two rounds of 50% each SIAs for 2017

2. **Supplementary strategy to improve AFP surveillance sensitivity:**

   – Improve national surveillance plan; expand the surveillance network to include private and NGOs health services special strategy to cover AFP
   – Develop an effective reporting system from district to province and national levels and ultimately to key partners
   – Continue strong advocacy with the government in order to put Polio Eradication in high priority.
   – Considering emerging situation of population movement, insecurity and damage of health facilities and provide support to non-Libans

# Syria and Iraq

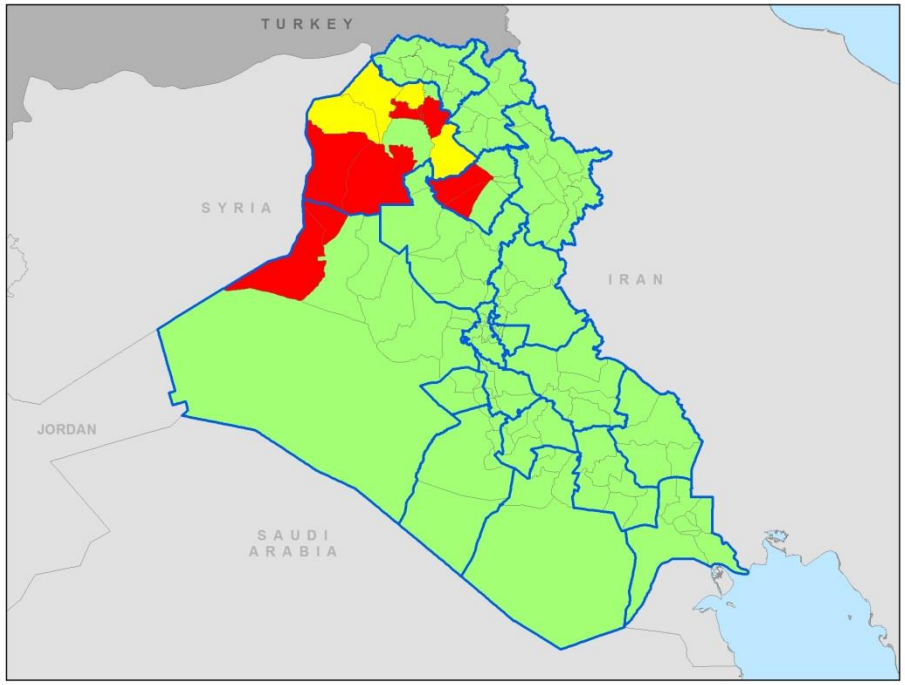
# Syria Accessibility map




Source: UNOCHA 26 January 2016

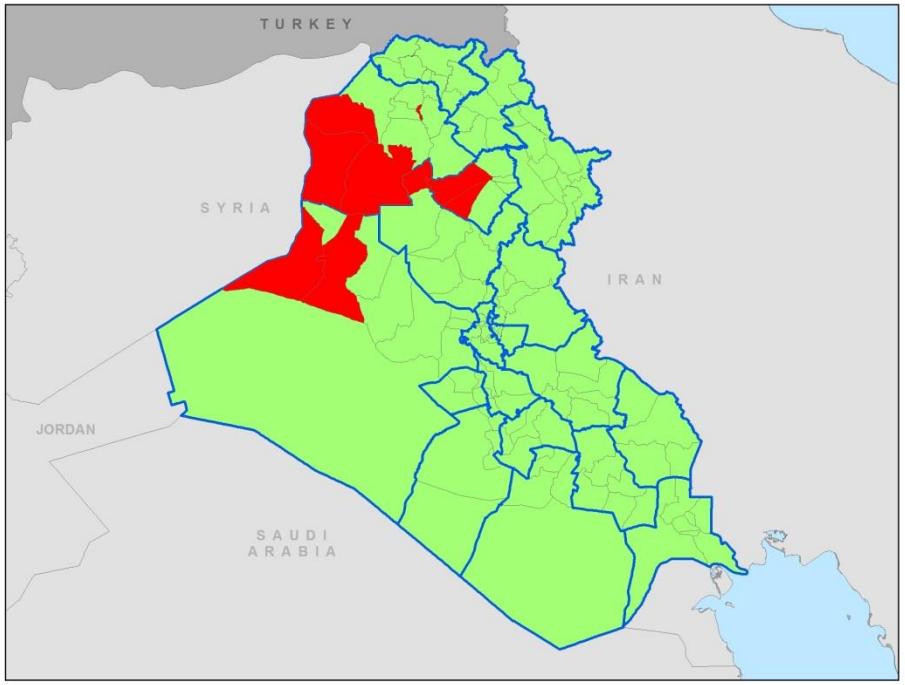
# IRAQ - Accessibility in SIAs

**NIDs October 2016**




No. inaccessible children - 431,368

**NIDs January 2017**

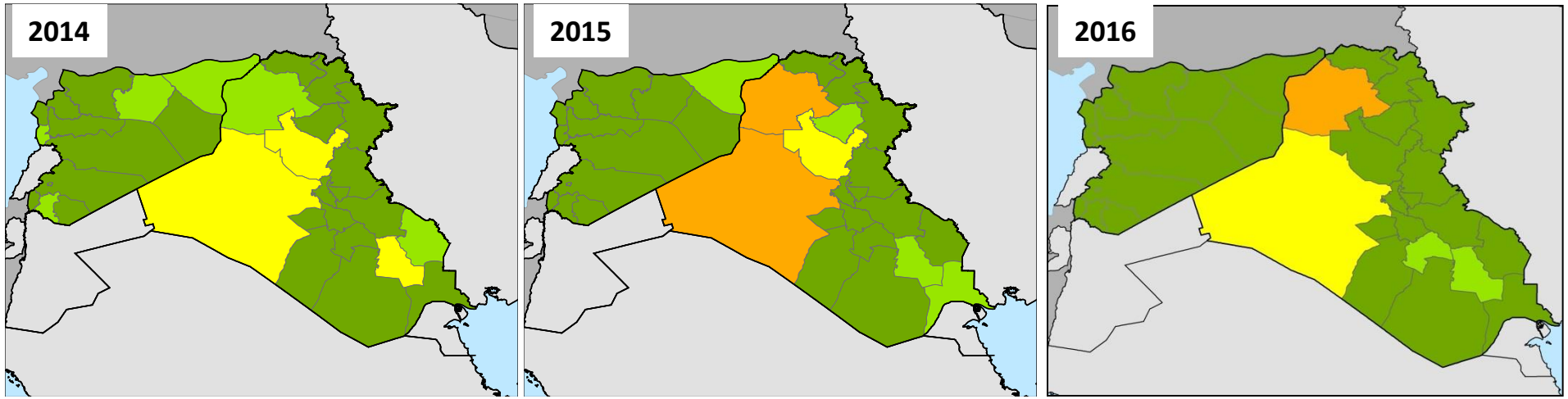



No. inaccessible children - **727,485**

# Key Surveillance indicators at provincial level, SYR & IRQ 2014-2016

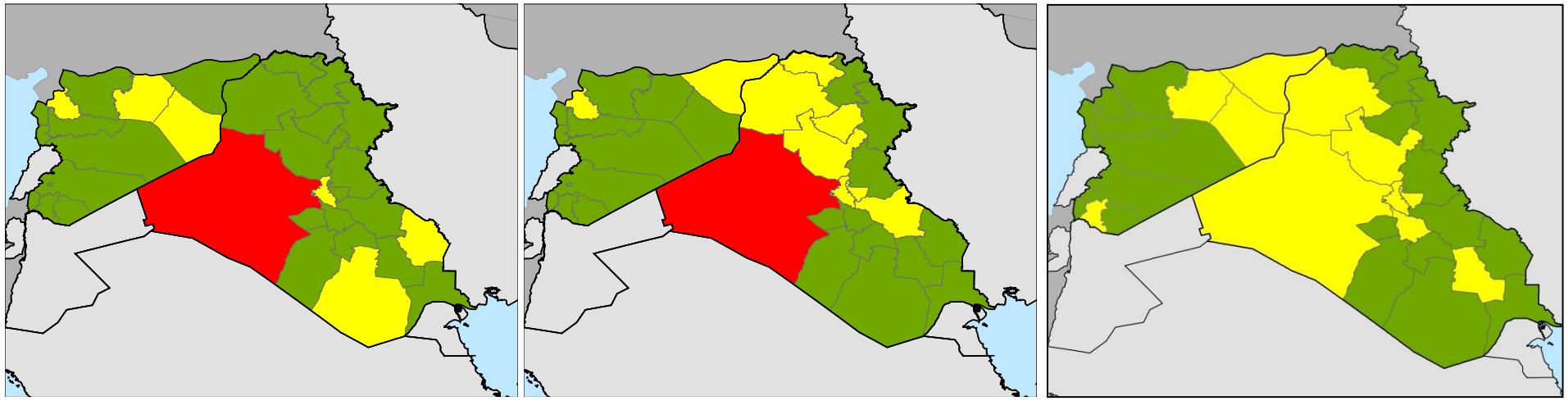
NP AFP rate

Silent province | <1 | 1 - <2 | 2 - <3 | 3+



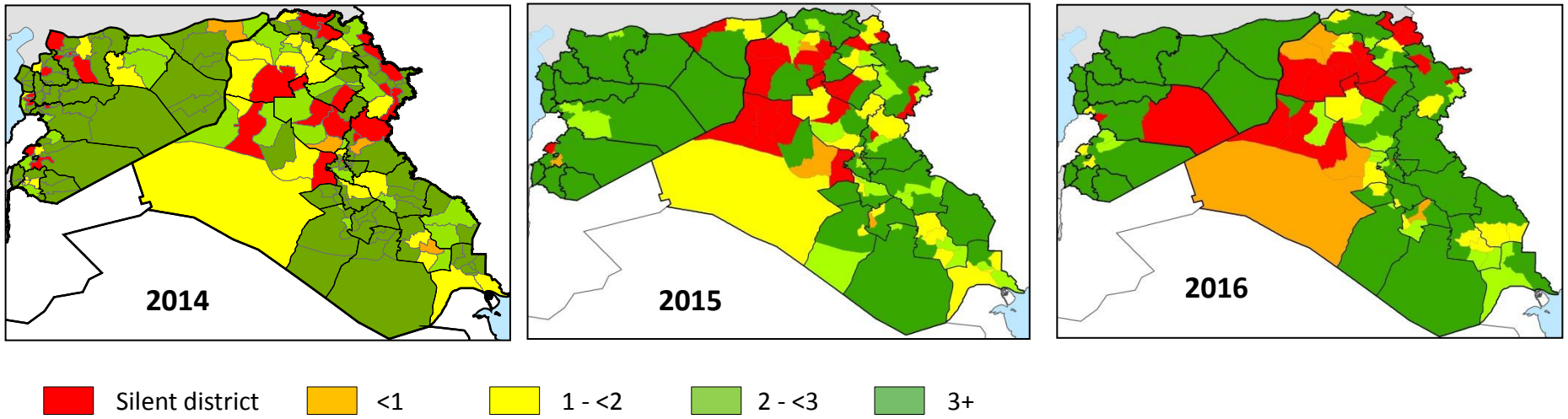

Stool adequacy rate

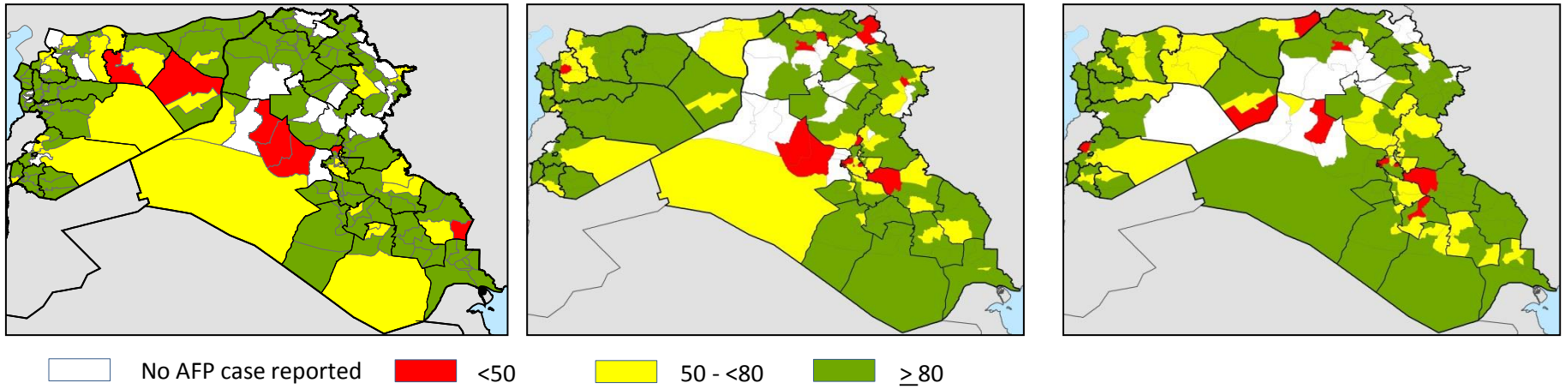
No AFP case reported | <50 | 50 - <80 | ≥80



* Compiled data in 2015 & 2016

# Key Surveillance indicators at district level, SYR & IRQ 2014-2016




*** Syria: Compiled data in 2015 & 2016**

# Understanding Population movement in Iraq…1

| Period of displacement | Displacement | | | | Returns | | | |
|---|---|---|---|---|---|---|---|---|
| | # Locations | IDP Families | IDP Individuals | % | # Locations | Returnees Families | Returnees Individuals | % |
| Pre-June14 | 1,049 | 51,158 | 306,948 | 10% | 104 | 34,526 | 207,156 | 14% |
| June-July14 | 2,125 | 105,861 | 635,166 | 21% | 250 | 59,344 | 356,064 | 24% |
| August14 | 1,680 | 122,649 | 735,894 | 24% | 217 | 41,955 | 251,730 | 17% |
| Post September14 | 1,566 | 57,357 | 344,142 | 11% | 201 | 41,422 | 248,532 | 17% |
| Post April15 | 1,381 | 81,280 | 487,680 | 16% | 93 | 35,833 | 214,998 | 15% |
| Post Mar2016 | 545 | 45,247 | 271,482 | 9% | 109 | 26,490 | 158,940 | 11% |
| Post 17 Oct2016 | 283 | 41,257 | 247,542 | 8% | 36 | 2,988 | 17,928 | 1% |
| **Total** | | **504,809** | **3,028,854** | **100%** | | **242,558** | **1,455,348** | **100%** |

# Understanding Population movement in Iraq…2

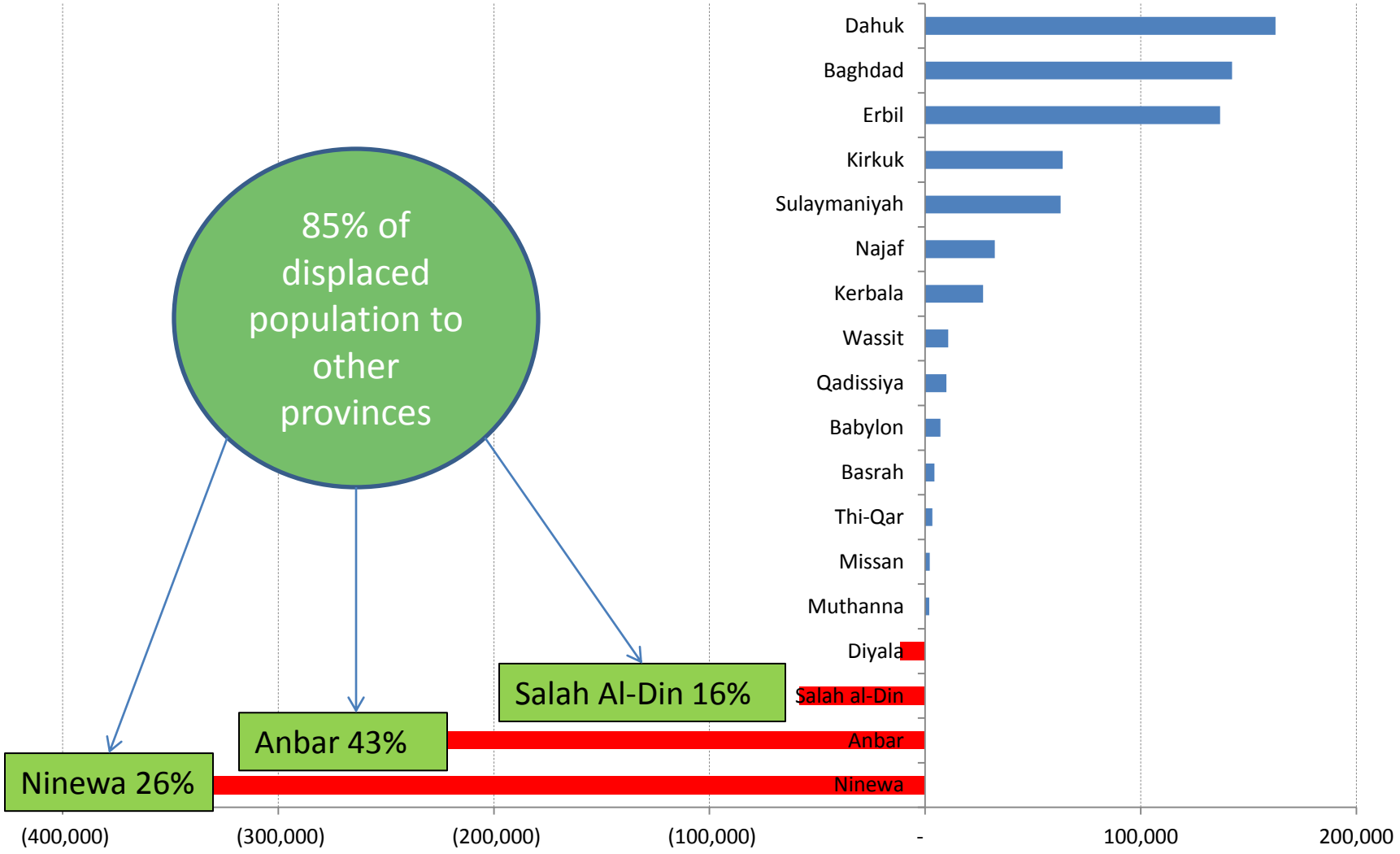
| Governorate | IDPs in province | Origin of IDPs | % displacement within province |
|---|---|---|---|
| Anbar | 261,678 | 850,440 | 30% |
| Babylon | 46,440 | 29,142 | 51% |
| Baghdad | 391,224 | 43,962 | 53% |
| Basrah | 10,554 | - | |
| Dahuk | 396,336 | - | |
| Diyala | 74,904 | 103,110 | 65% |
| Erbil | 347,604 | 13,896 | 100% |
| Kerbala | 65,688 | - | |
| Kirkuk | 372,348 | 216,810 | 73% |
| Missan | 5,322 | - | |
| Muthanna | 4,584 | - | |
| Najaf | 78,888 | - | |
| Ninewa | 433,392 | 1,301,052 | 32% |
| Qadissiya | 24,042 | - | |
| Salah al-Din | 328,248 | 470,442 | 58% |
| Sulaymaniyah | 153,156 | - | |
| Thi-Qar | 8,346 | - | |
| Wassit | 26,100 | - | |
| **Total** | **3,028,854** | **3,028,854** | |

Mosul operation:

- 164,178 IDPs (68,500 U15) are displaced mainly in Hamdaniya district (51%) and Mosul (39%)
- 35,000 U15 in Hamdaniya. Original U15 Population is : 77,000 Nb AFP 2016: 0, 1 since 2014
- 27,000 U15 in Mosul. Current U15 population is: 718,000 Nb AFP 2016: 7

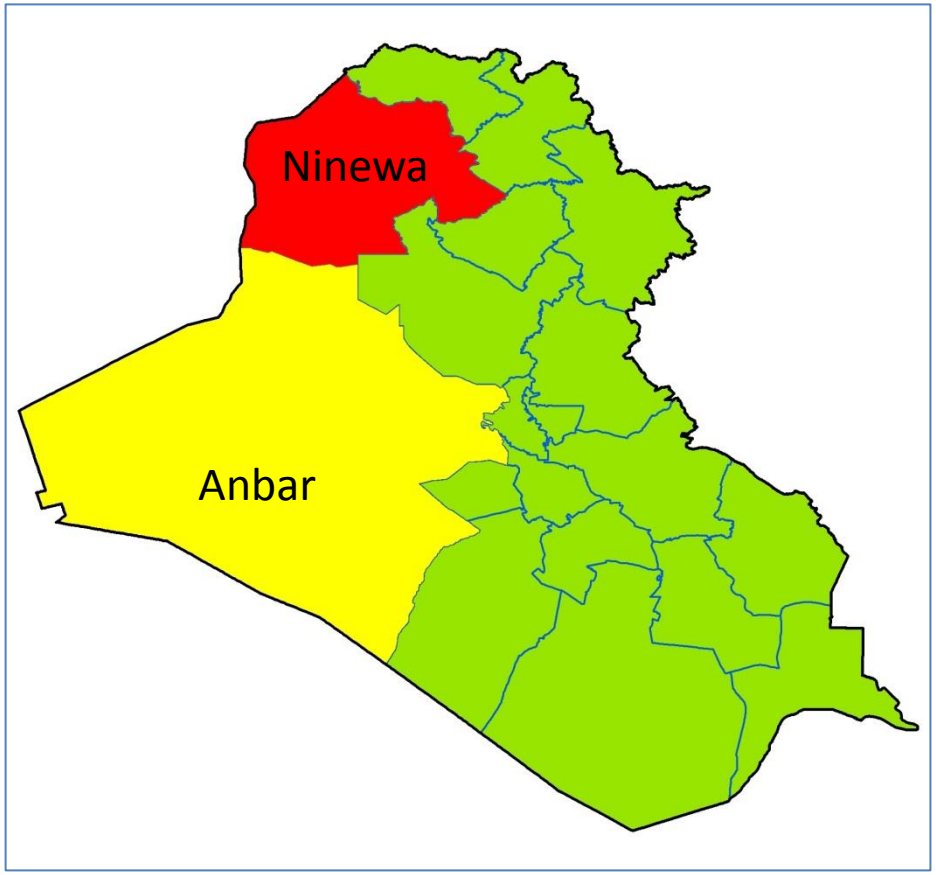
# Population <15 years Movement (IDPs)

## Origin and destinations of IDPs from other provinces

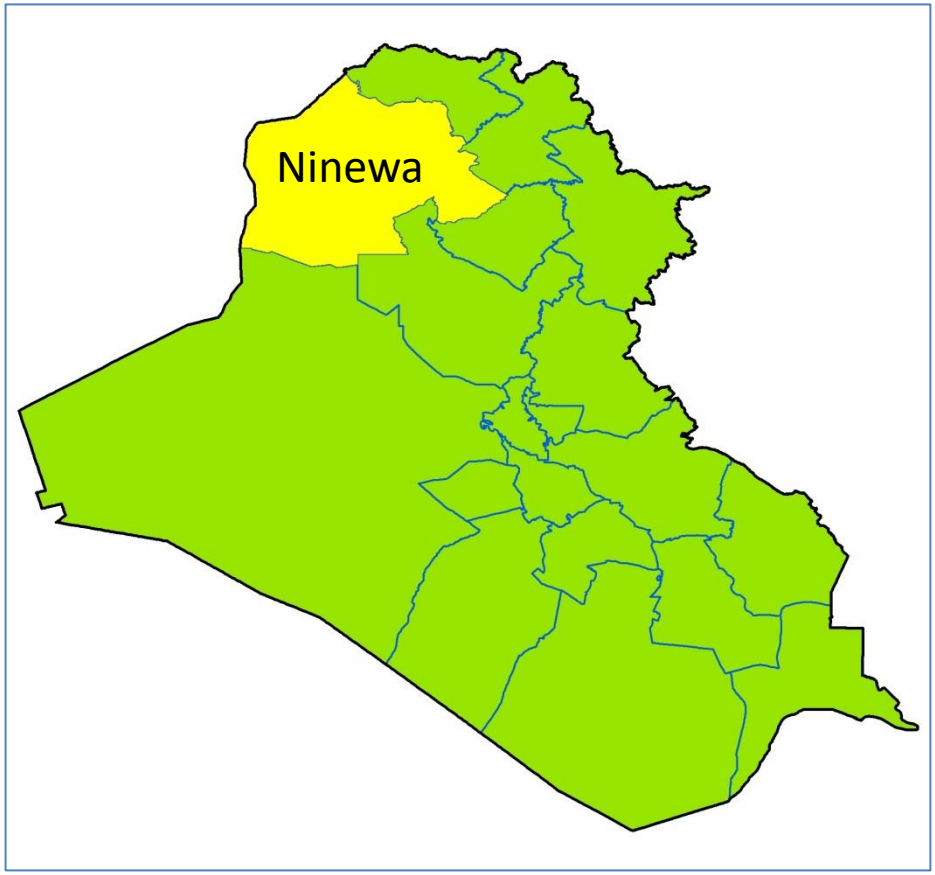


# The effect of population movement on NP AFP rate, Iraq 2016

**NPAFP rate**




**Adjusted NPAFP due to pop movement**

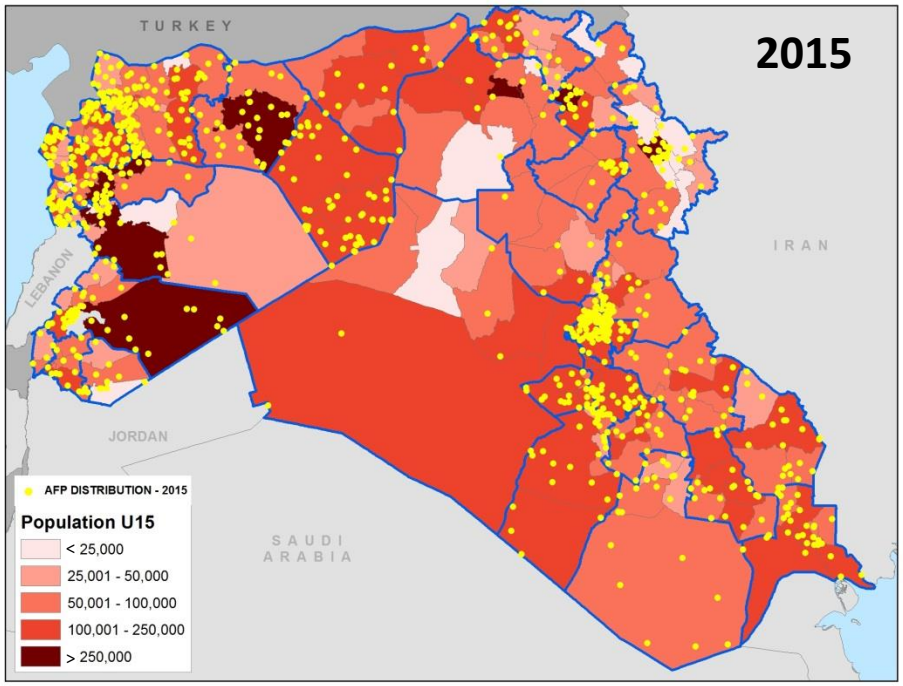


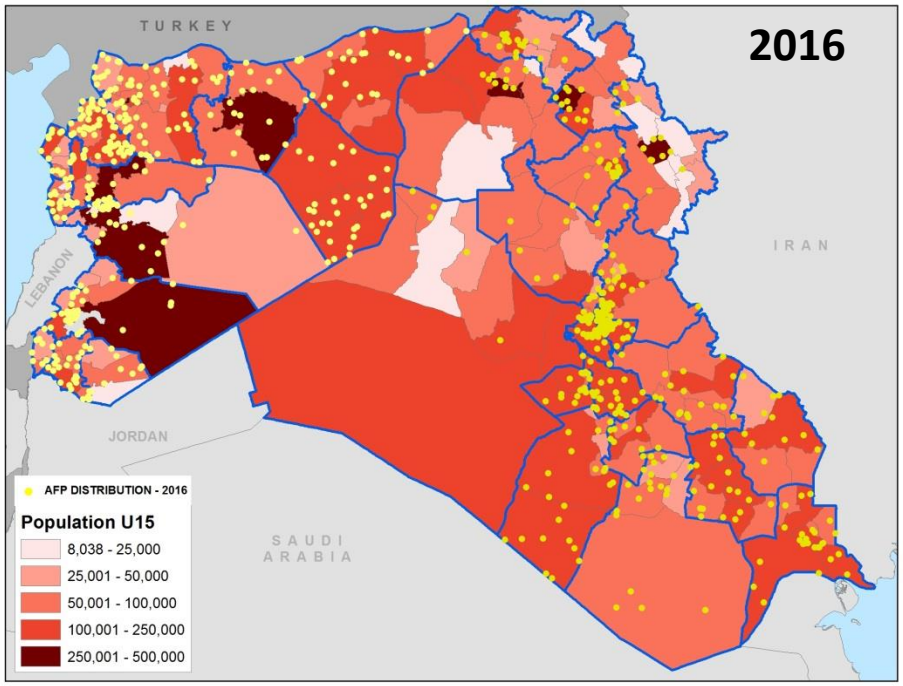

**Legend** < 1 | 1 - 2 | >= 2

# Adjusted NPAFP rate by province, Iraq 2016

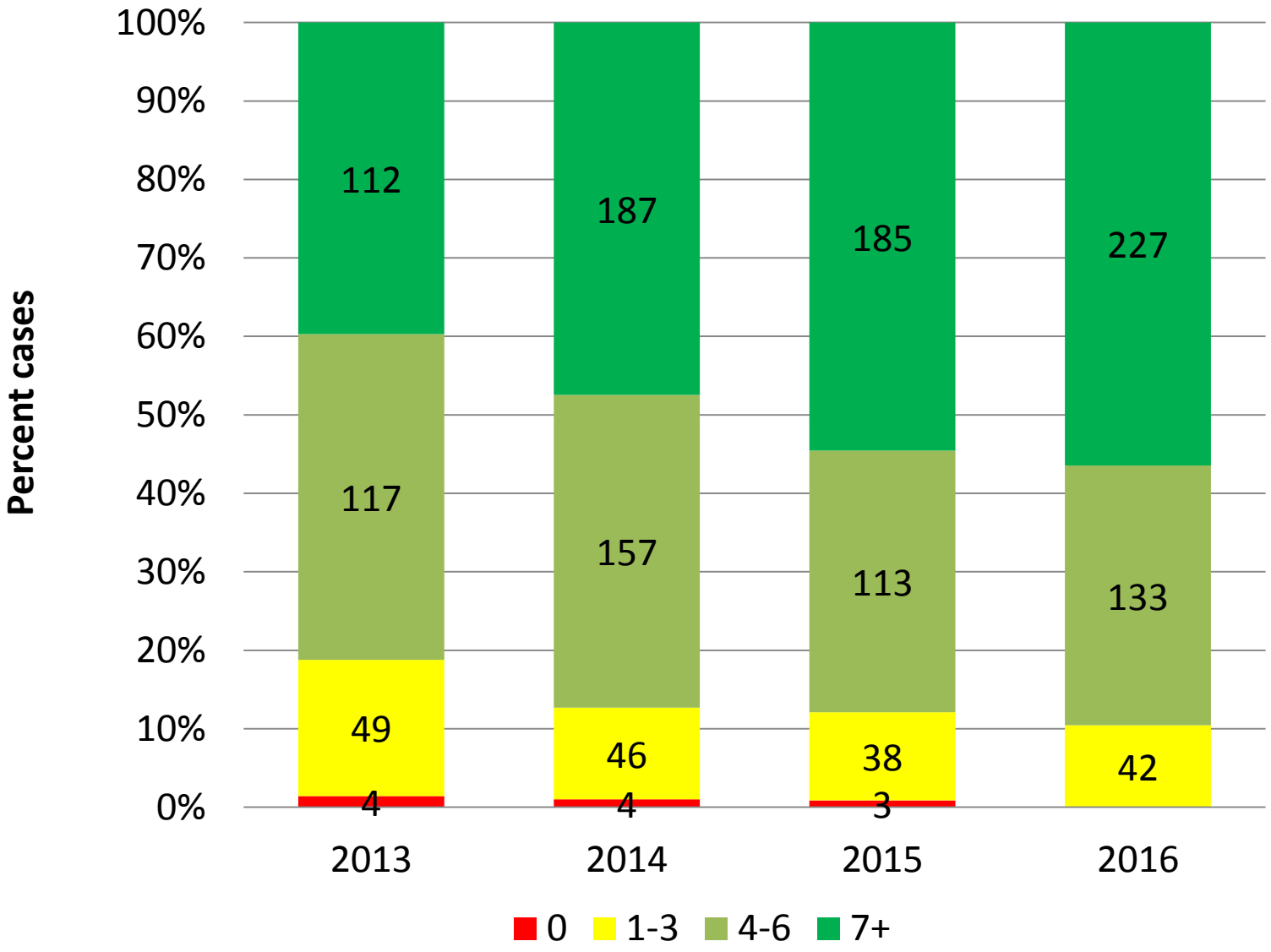
| PROVINCE | AFP | POPTOT | NPAFPR | Adjusted_Pop | Adj_NPAFPR |
|---|---|---|---|---|---|
| ANBAR | 12 | 677,650 | 1.77 | 436,258 | 2.75 |
| BABYLON | 33 | 789,997 | 4.18 | 797,089 | 4.14 |
| BAGHDAD-KARKH | 61 | 1,727,390 | 3.53 | 1,727,390 | 3.53 |
| BAGHDAD-RESAFA | 110 | 1,659,391 | 6.63 | 1,801,768 | 6.11 |
| BASRAH | 41 | 1,077,579 | 3.80 | 1,081,906 | 3.79 |
| DAHUK | 23 | 451,471 | 5.09 | 613,969 | 3.75 |
| DIWANIYA | 14 | 493,118 | 2.84 | 502,975 | 2.78 |
| DIYALA | 40 | 611,478 | 6.54 | 599,914 | 6.67 |
| ERBIL | 22 | 710,171 | 3.10 | 846,991 | 2.60 |
| KERBALA | 21 | 453,220 | 4.63 | 480,152 | 4.37 |
| KIRKUK | 36 | 608,732 | 5.91 | 672,503 | 5.35 |
| MISSAN | 16 | 406,770 | 3.93 | 408,952 | 3.91 |
| MUTHANNA | 25 | 302,491 | 8.26 | 304,370 | 8.21 |
| NAJAF | 29 | 560,634 | 4.99 | 592,978 | 4.89 |
| NINEWA | 12 | 1,381,204 | 0.87 | 1,025,463 | 1.17 |
| SALAH AL-DIN | 19 | 592,463 | 3.21 | 534,163 | 3.56 |
| SULAYMANIYAH | 31 | 721,329 | 4.30 | 784,123 | 3.95 |
| THI-QAR | 19 | 803,629 | 2.36 | 807,051 | 2.35 |
| WASSIT | 41 | 510,706 | 8.03 | 521,407 | 7.86 |

# Distribution AFP case by district, Iraq & Syria, 2015 - 2016



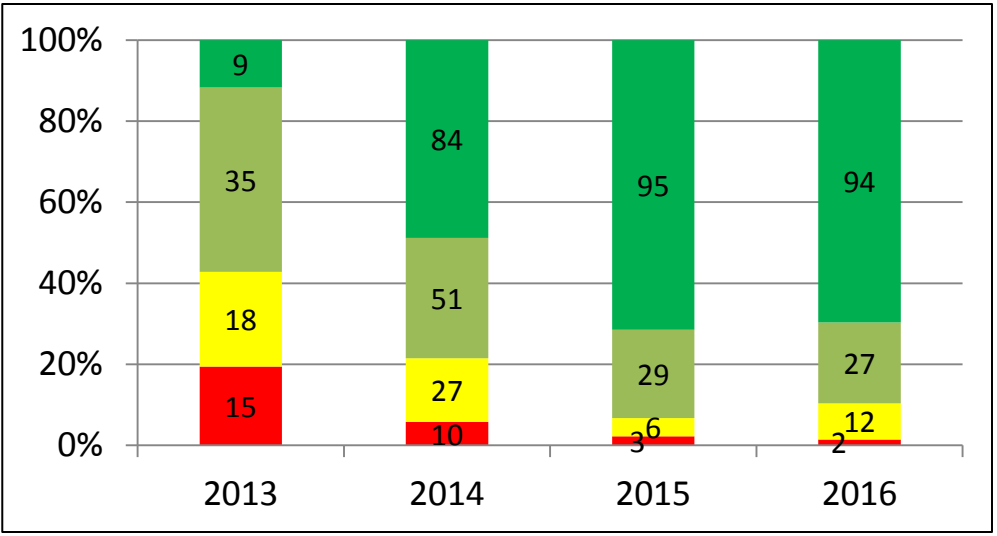



# Vaccination status of NP AFP 6-59 month Iraq

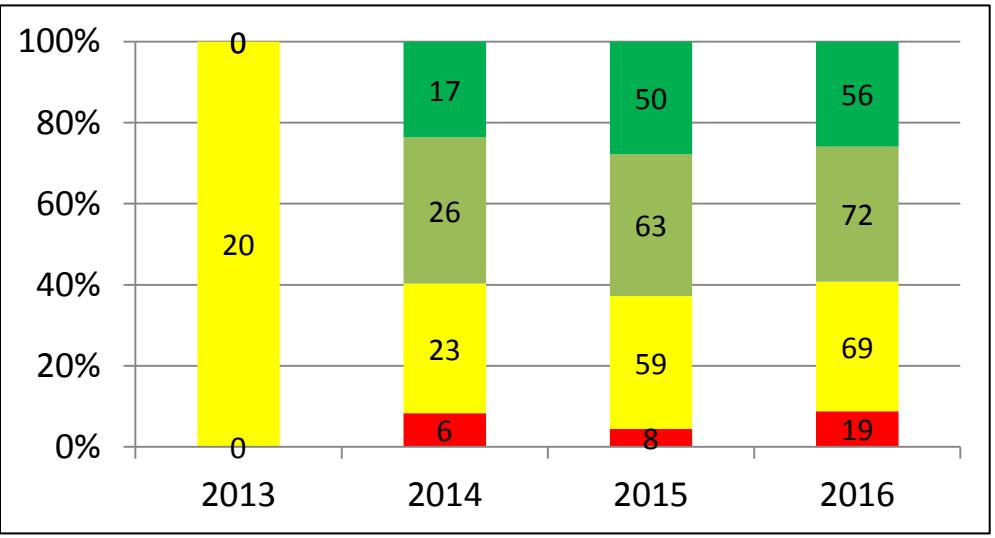


# Vaccination status of NP AFP 6-59 month Syria

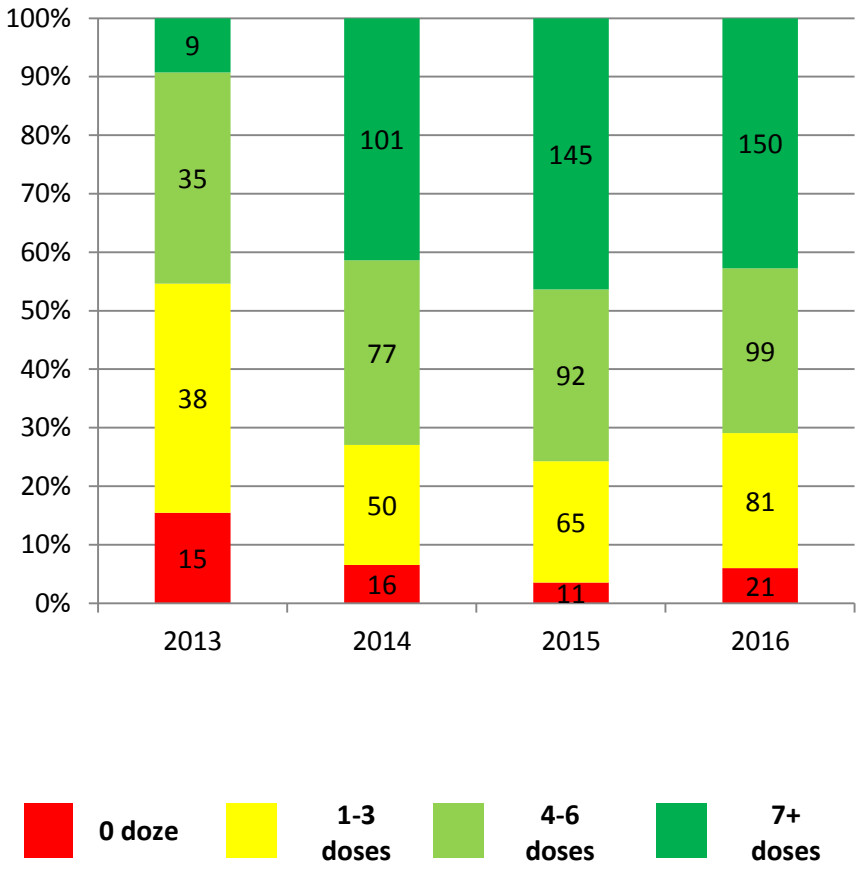
Source: MOH



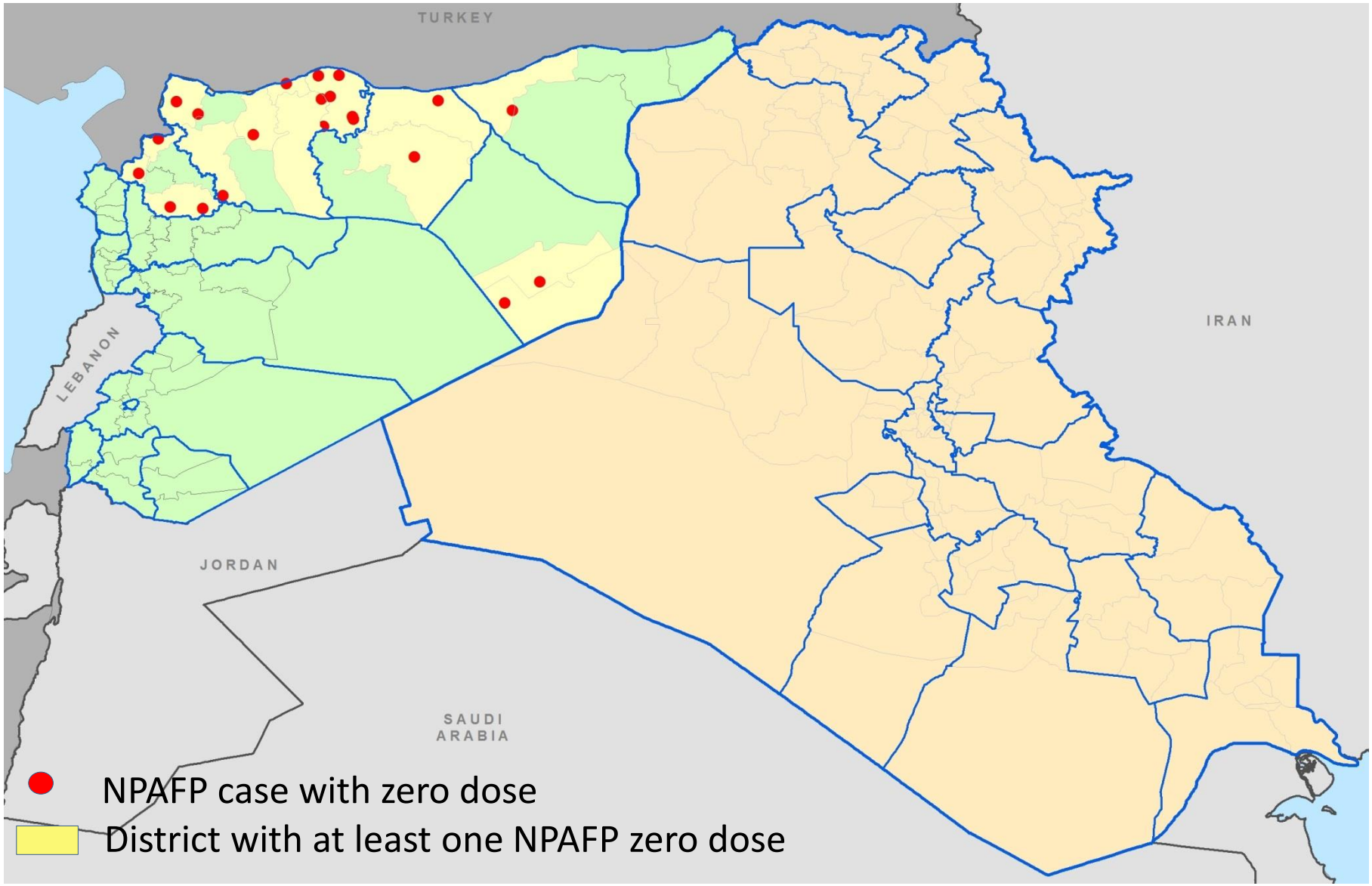

Source: Others



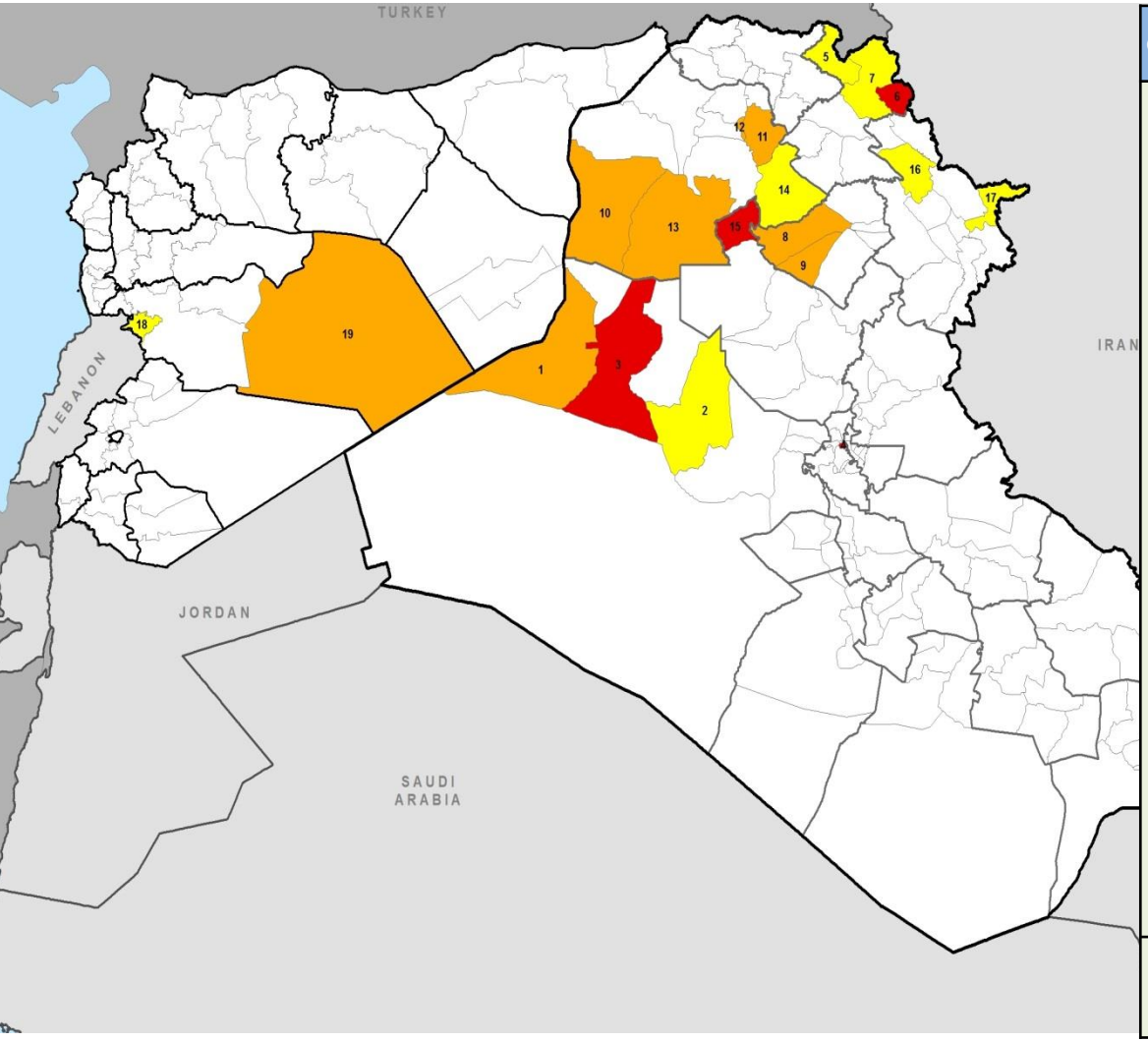

All sources



# Distribution of AFP cases with zero OPV, 6-59 Months Age, 2016 – Syria & Iraq



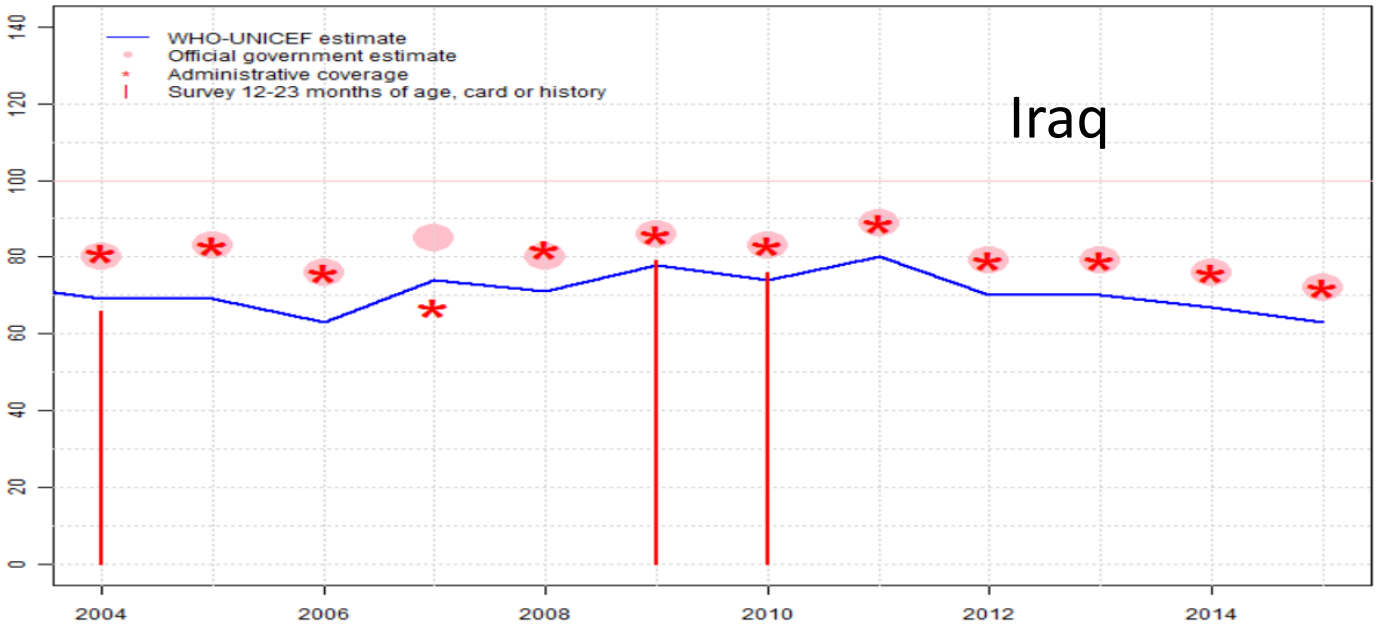
# Silent Districts, 2016 Syria & Iraq



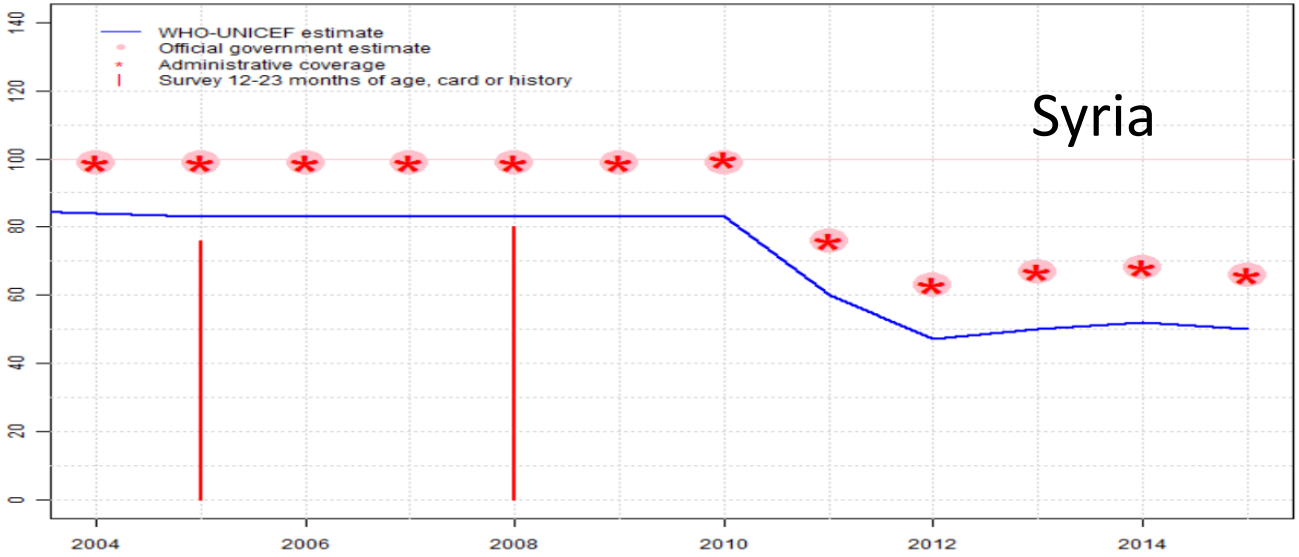

| COUNTRY | PROVINCE | # | DISTRICT | Silent for number of years (2014-2016) | Population U15 |
|---|---|---|---|---|---|
| IRAQ | ANBAR | 1 | AL-KA'IM | 2 | 67,764 |
| | | 2 | HEET | 1 | 58,280 |
| | | 3 | RAWA-ANA | 3 | 23,717 |
| | BAGHDAD-KARKH | 4 | ALRASHEED | 3 | 288,139 |
| | ERBIL | 5 | BARZAN | 1 | 21,223 |
| | | 6 | CHOMAN | 3 | 14,715 |
| | | 7 | SORAN | 1 | 70,595 |
| | KIRKUK | 8 | AL-HAWIGA1 | 2 | 73,054 |
| | | 9 | AL-HAWIGA2 | 2 | 83,313 |
| | NINEWA | 10 | AL-BA'AJ | 2 | 66,263 |
| | | 11 | AL-HAMDANIYA | 2 | 77,049 |
| | | 12 | AYSER | 2 | 325,856 |
| | | 13 | HATRA | 2 | 21,854 |
| | | 14 | MAKHMUR | 1 | 62,488 |
| | SALAH AL-DIN | 15 | AL-SHIRQAT | 3 | 81,664 |
| | SULAYMANIYAH | 16 | DOKAN | 1 | 19,842 |
| | | 17 | SHARAZOOR | 1 | 41,826 |
| SYRIA | HOMS | 18 | KUSAIER | 1 | 27,360 |
| | | 19 | TADMOUR | 2 | 43,200 |

Silent for more than two years
Silent for two years
Silent for this year
Reported one AFP case at least for this year

# WHO-UNICEF estimates of routine POL3 coverage Iraq & Syria




| | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Estimate | 69 | 69 | 63 | 74 | 71 | 78 | 74 | 80 | 70 | 70 | 67 | 63 |




| | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Estimate | 84 | 83 | 83 | 83 | 83 | 83 | 83 | 60 | 47 | 50 | 52 | 50 |

# Implementation of planned activities - IRAQ 2016

| Planned | Implemented |
|---|---|
| 3 NIDs rounds | 3 NIDs rounds |

| | | |
|---|---|---|
| **Three national surveillance review meetings.** | Done ✔ | |
| **Establishment of an environmental surveillance** | In progress. | Two sites were identified. Iraq might be able to start the sampling in January; however, there is a need to train the workers on collecting the samples. |

# Actitvities conducted in Iraq in 2016

| SIAs | Total vaccinated | Date |
|---|---|---|
| Six emergency campaigns in response to displaced people in Salaheddin | 32,813 | |
| 1st round of emergency campaign in Anbar | 142,231 | Aug |
| 2nd round of emergency campaign in Anbar | 223,8209 | Sep |
| Emergency campaign in Dabaga and Qayyara districts for Ninewa IDPs | 32,000 | Aug-Sep |
| emergency campaign in response to Ninewa operations in Ninewa and 5 surrounding governorates | 700,545 | Dec |
| Continuous vaccination for the new arrival of IDPS from Ninewa | 16,496 | Through vaccination posts in the camps. From 17 Oct to 31st Dec |
| Surveillance | | |
| Three national surveillance review meetings | | |
| Identification of two sites to establish the ES | | Baghdad: Karak and Resafa |

# Implementation of planned activities – Syria 2016

| Planned | Implemented |
|---|---|
| 2 NIDs rounds<br>2 SNIDs rounds | 2 NIDs rounds<br>2 SNIDs rounds |

| | | |
|---|---|---|
| **Trainings for strengthening AFP Surveillance at national & governorate levels** | Done ✔ | |
| **Seminars for paediatricians at national & governorate levels** | Done ✔ | |
| **Issuance of weekly surveillance reports** | Done ✔ | Both the IFA line list and AFP surveillance weekly update. |
| **Implementation of log Tag** | Done in provinces where the NPEV rate was low ✔ | |
| **Conduct Risk Assessment at national & governorate levels** | Risk analysis done every 6 months ✔ | IFA tool was used to produce the risk analysis maps. |

# Conclusion – Iraq

1. AFP surveillance system sensitivity:
   - **Sensitive** surveillance system in the accessible areas however there is a potential surveillance gap in the security compromised areas.
   - Surveillance in Baghdad needs to be efficient for optimum performance

2. Risk of,
   - Undetected polio transmission? **Low** in most areas due to good sensitivity and **Medium** in security compromised areas
   - WPV Importation/spread or VDPV emergence **Medium**, due to expected cohort of susceptible children in security compromised areas, population movement and mass gathering during religious events

# Way forward – Iraq

1. Supplementary strategy to enhance pop immunity:
   - Emergency response to any new displacement or access
   - Two NID planned in Jan and March 2017.
   - Transit Points Vaccination Teams (Emergency response)

2. Supplementary strategy to improve AFP surveillance sensitivity :
   - Community Based Surveillance planned in 2017
   - Stool samples collected from AFP contacts in affected areas
   - Stool samples collected from healthy children
   - Environmental Surveillance planned in 2017

# Conclusion - Syria

1. AFP surveillance system sensitivity:
   - **Sensitive** surveillance system with both facility and community based surveillance network including in the inaccessible areas.
   - EWARN system is functional in opposition controlled areas
2. Presence of cohort of susceptible children:
   - **Yes**, expected cohort of susceptible children in the inaccessible areas (<10% of total country target)
3. Risk of:
   - Undetected polio transmission: **Low**, due to sensitive & innovative surveillance (EWARN system).
   - WPV Importation/ spread or emergence of VDPV: **Medium**, due to presence of susceptible children, poor routine immunization and presence of zero OPV dose AFP cases in certain areas.

# Way forward – Syria

1. Supplementary strategy to boost immunity of susceptible children:
   - Three NIDs rounds
   - One SIAs round in hard to reach areas
   - Accelerated RI campaign in hard to reach areas
   - Transit Point Vaccination Teams

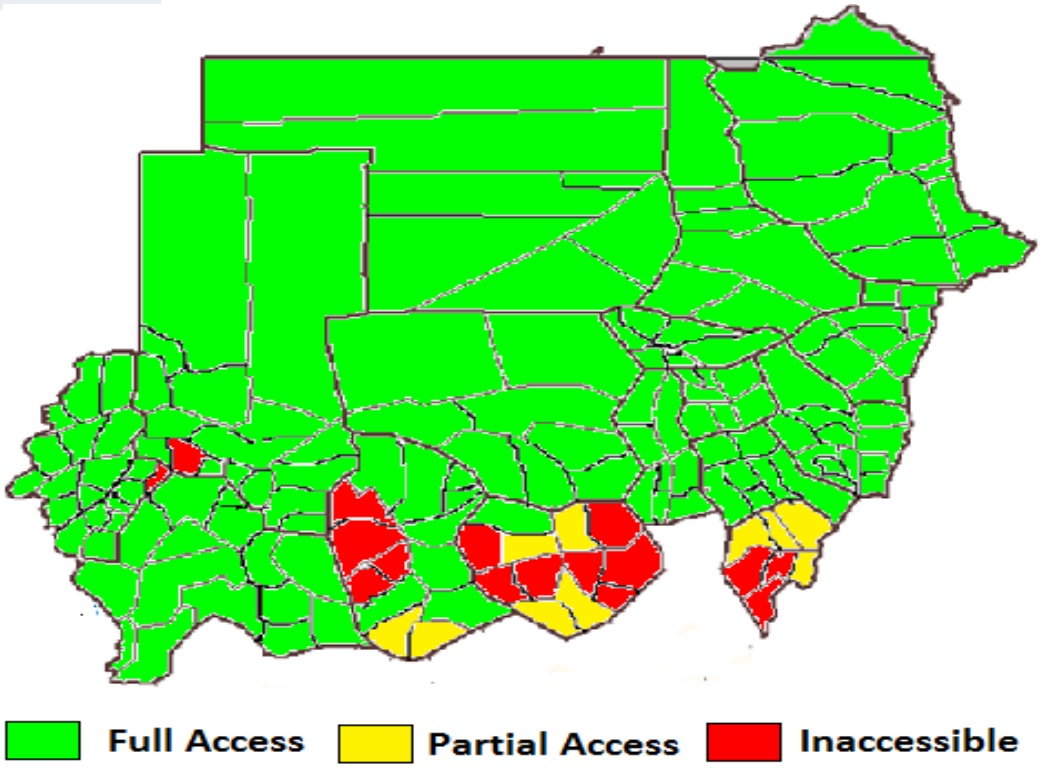
2. Supplementary strategy to enhance AFP surveillance sensitivity:
   - EWARN system & community surveillance in inaccessible areas
   - Stool samples collected from AFP contacts
   - Environmental Surveillance: Planned to start in 2017

# Sudan

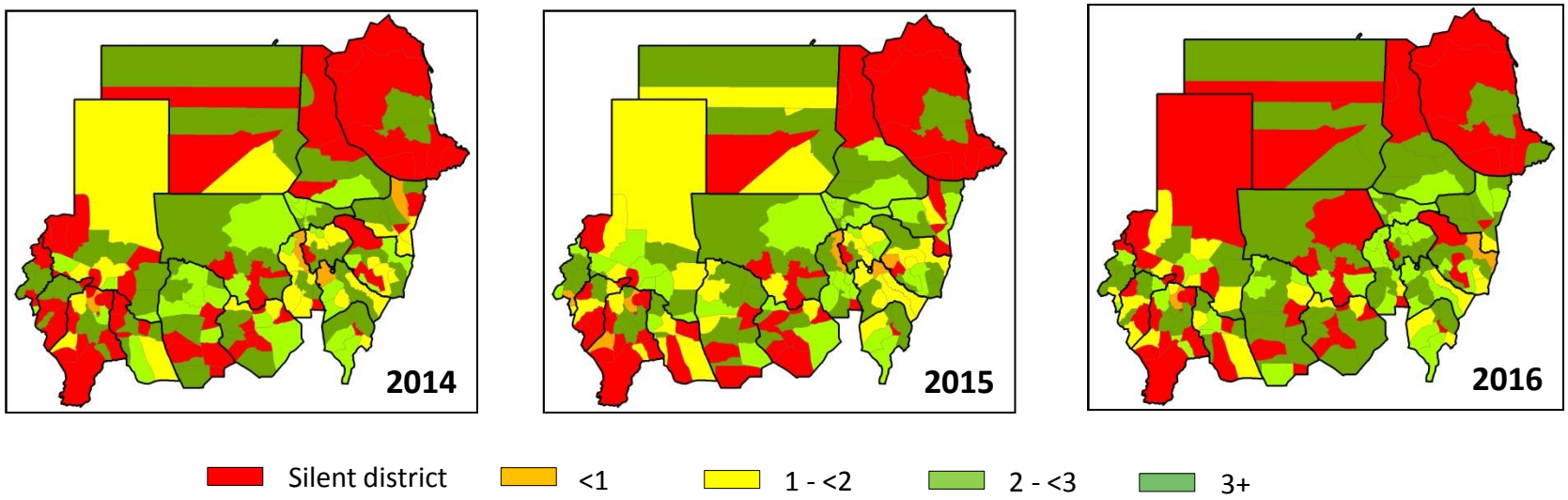
December 2016

# Accessibility to Immunizations, Sudan – 2016

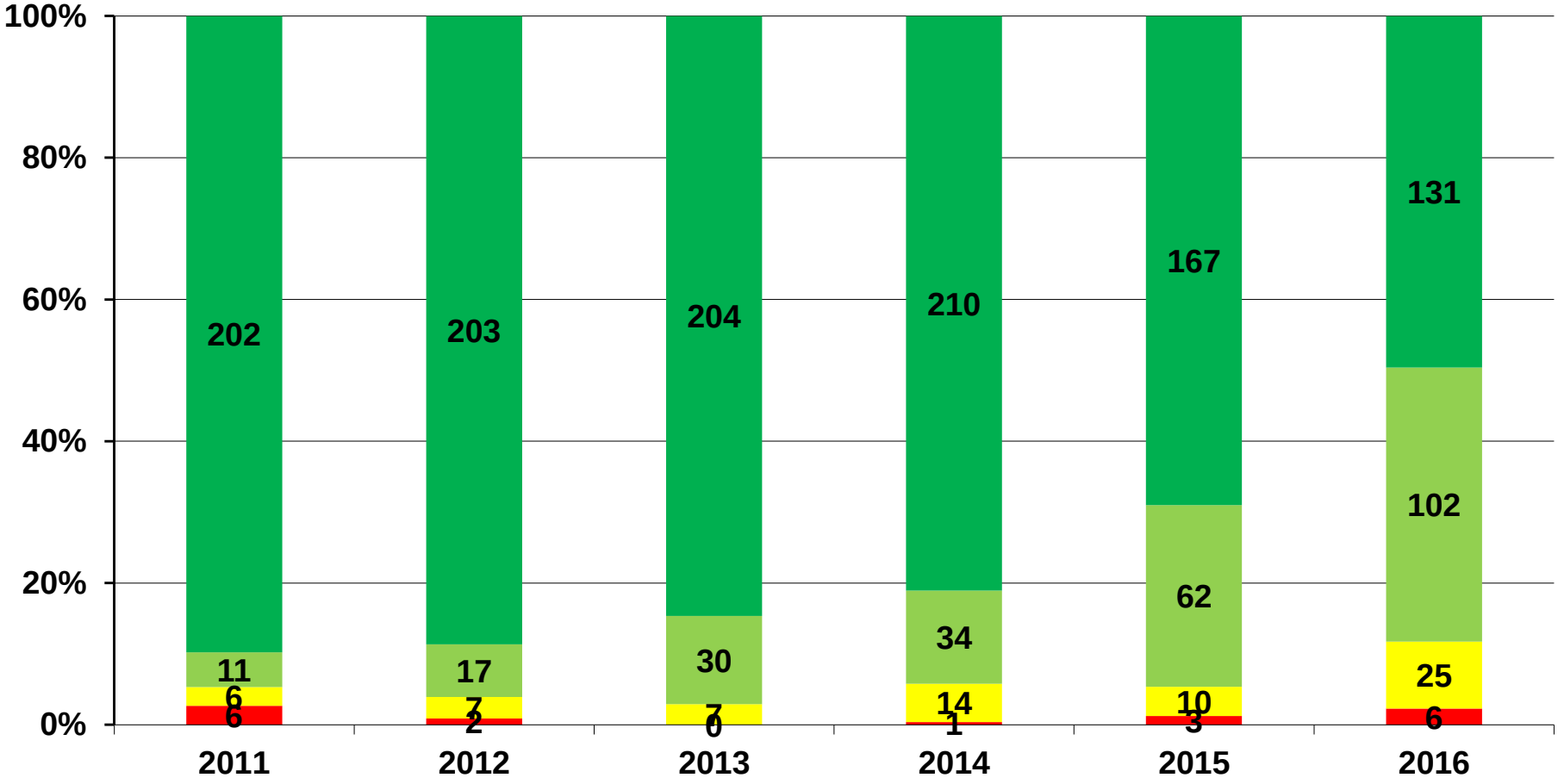
| Access to Immunizations | No of <5 years kids | % |
|---|---|---|
| Full Access | 7,447,445 | 93.6% |
| Partial Access | 258,965 | 3.3% |
| Inaccessible | 243,050 | 3.1% |
| Total Sudan | 7,950,460 | 100% |



# Key Surveillance indicators at district level, Sudan 2014-2016



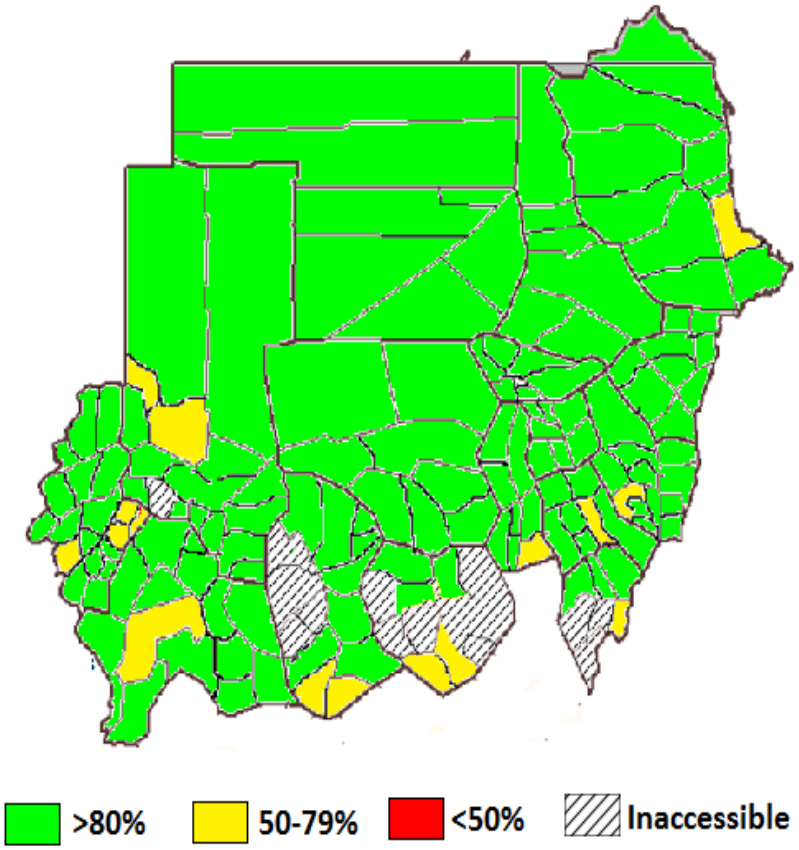
# Percent distribution of AFP cases 6-59 months by number of OPV doses, 2011-2016



# Routine EPI, Sudan 2016

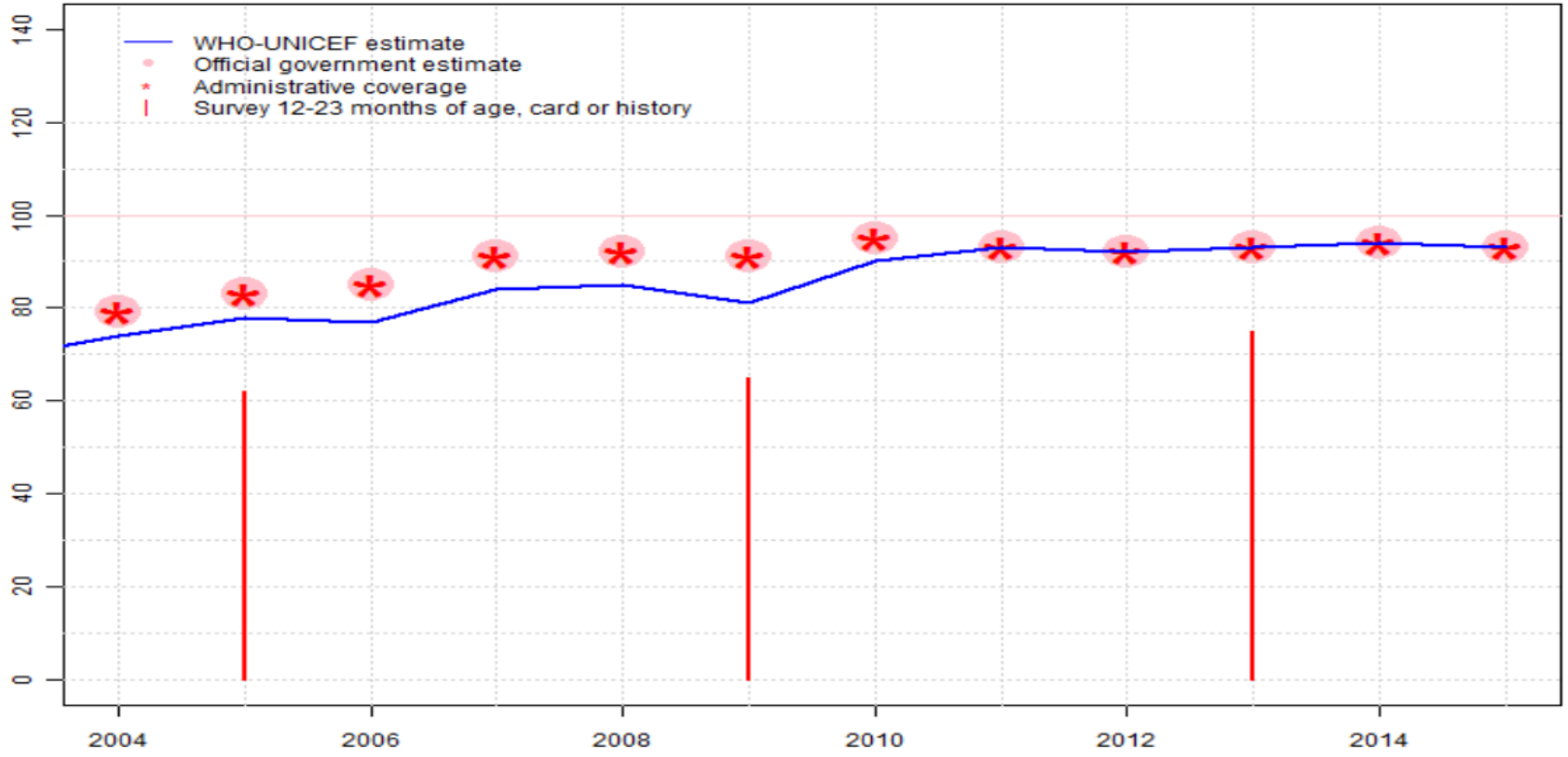
**OPV3 Coverage by State, 2016**


**OPV3 Coverage by District**




**National RI Coverage = 92%**

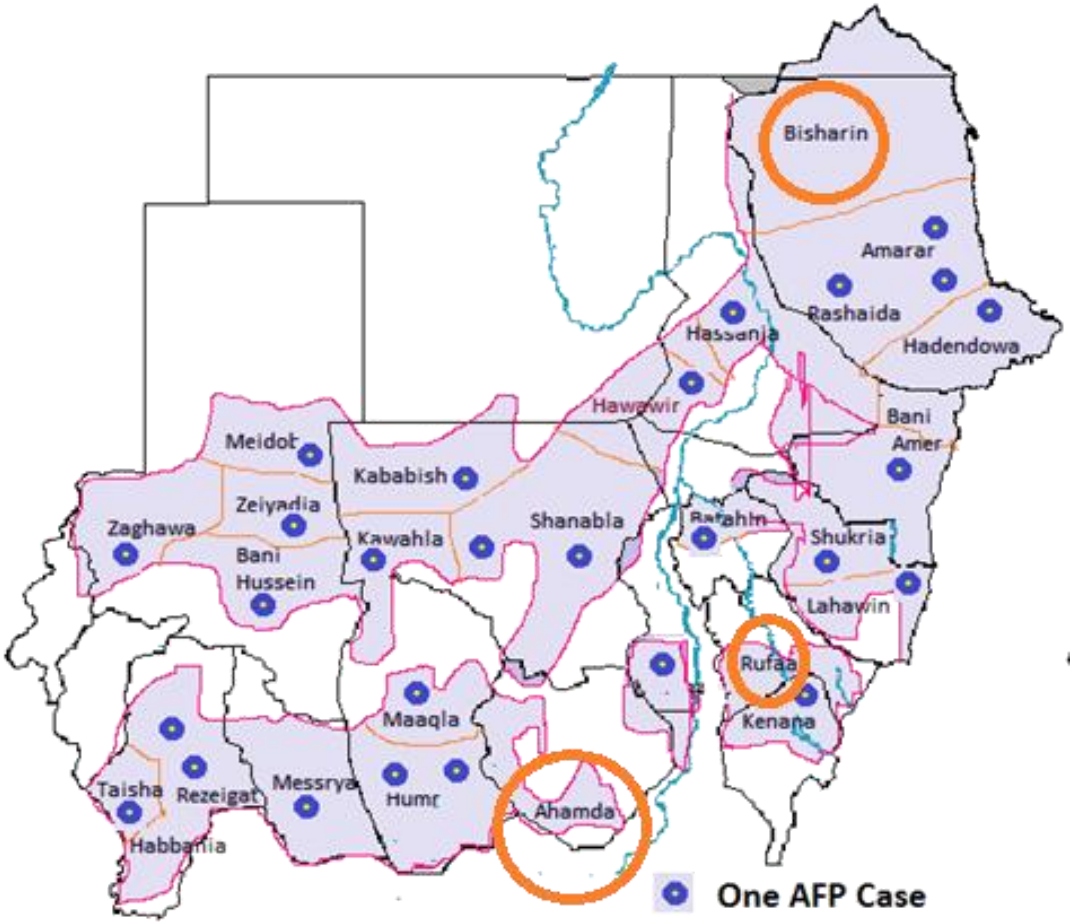
# WHO-UNICEF estimates of routine POL3 coverage, Sudan




| | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Estimate | 74 | 78 | 77 | 84 | 85 | 81 | 90 | 93 | 92 | 93 | 94 | 93 |

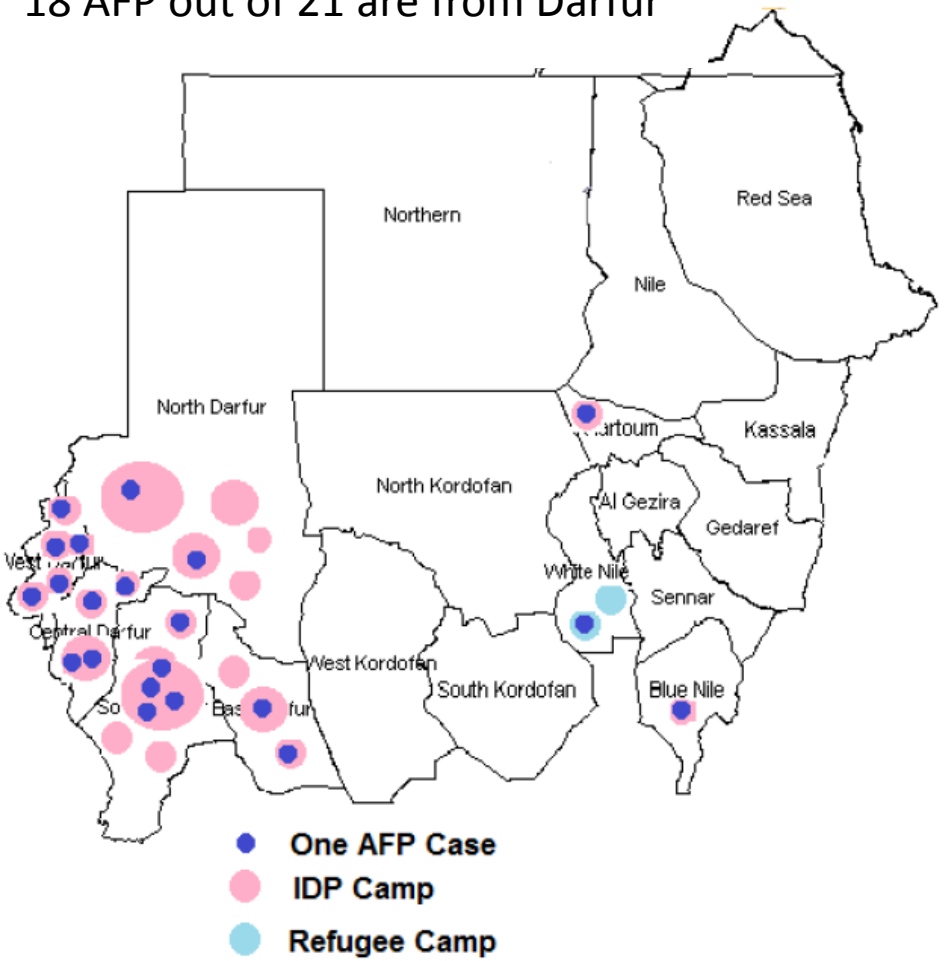
# AFP Cases Reported From Nomads, by Tribe and State, 2016 – Sudan

**6% of total 504 AFP cases reported in 2016 are from Nomadic**



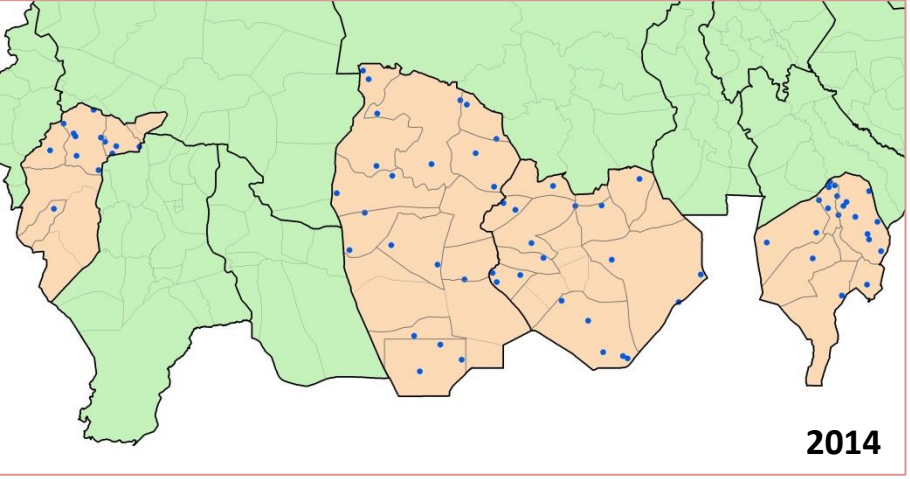
# AFP cases reported from vulnerable populations, Sudan 2016

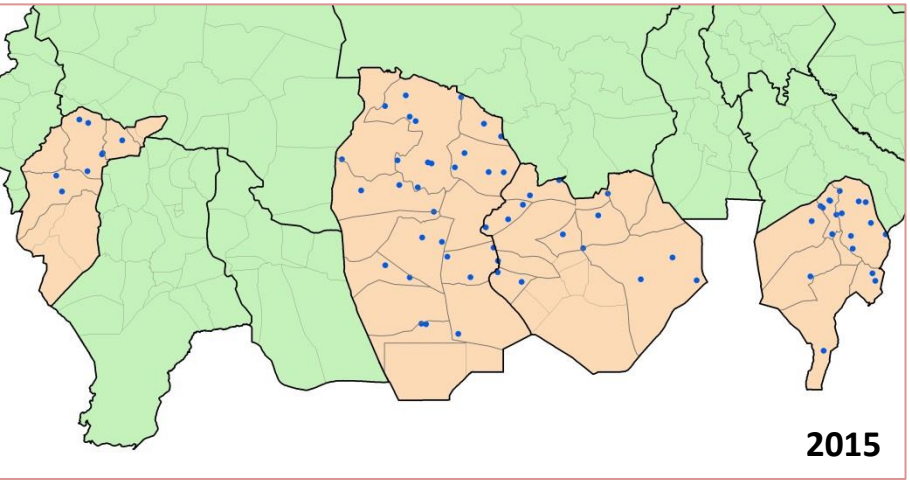
18 AFP out of 21 are from Darfur

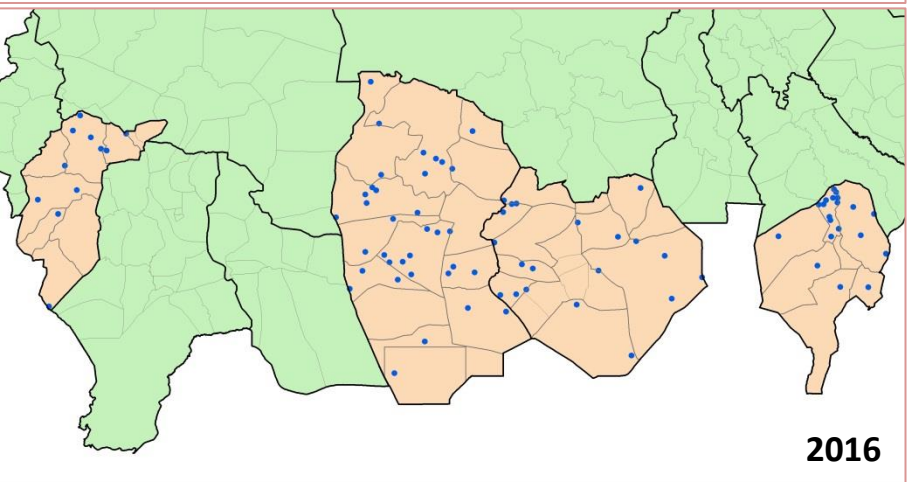


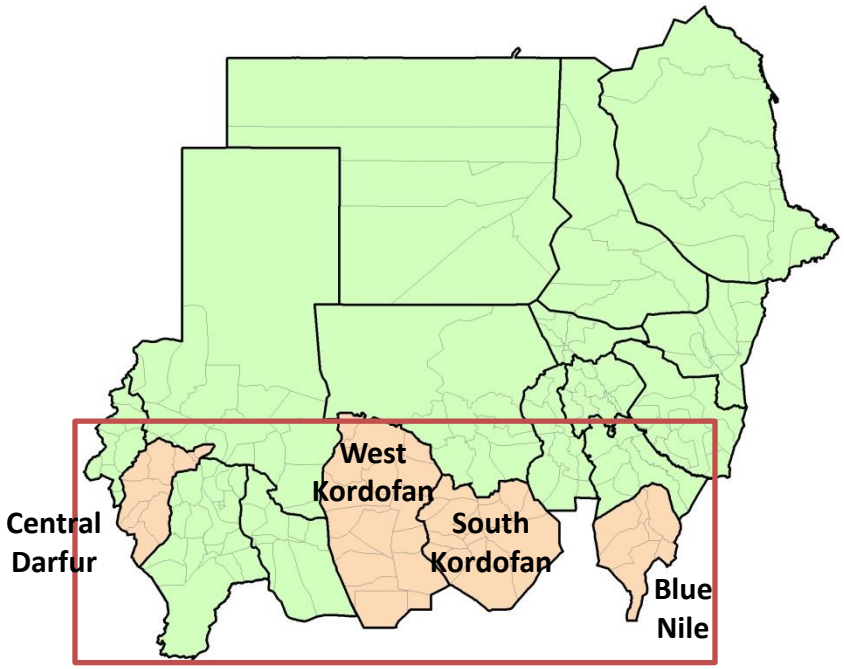

| State | IDP Camp | AFP Cases |
|---|---|---|
| Central Darfur | Hasahisa IDP Camp | 2 |
| | Jadda IDP Camp | 1 |
| | Tor Sharif IDP Camp | 1 |
| East Darfur | Elsalam IDP Camp | 1 |
| | Mohajria IDP Camp | 1 |
| North Darfur | Dabbat Nyra IDP Camp | 1 |
| | Zamzam IDP Camp | 1 |
| South Darfur | Kalma IDP Camp | 4 |
| | Dagga IDP Camp | 1 |
| West Darfur | Medinat Hujjaj | 1 |
| | Abuja IDP Camp | 2 |
| | Elryad IDP Camp | 1 |
| | Koma IDP Camp | 1 |
| Blue Nile | Daim Jomaa IDP Camp | 1 |
| Khartoum | Dar Elsalam IDP Camp | 1 |
| White Nile | Um Sangor IDP Camp | 1 |
| **Total IDP Camps** | | **21** |

# AFP Cases Reported from conflict affected States (South & West Kordofan and Blue Nile) Sudan, 2014-2016




- Sudan initiated transit vaccination posts to screen children for AFP and provide OPV.
- OPV vaccination is given to children who appeared in the bazar days near to the inaccessible areas.

# Implementation of planned activities 2016

| Planned | Implemented |
|---|---|
| 2 SNIDs | 2 SNIDs |

| | |
|---|---|
| **Sensitization of health care providers on AFP.** | Done ✔ |
| **Active AFP surveillance** | Done at rate > 90% ✔ |

# Conclusion - Sudan

AFP surveillance sensitivity:

- **Sensitive** country wide, but **evidence for gaps** in partially / inaccessible areas

Presence of cohort of susceptible children:

- **Yes**. An estimated 240,000 U5s inaccessible to campaigns & a further 260,000 live in partially accessible areas

Risk of:

- Undetected or late detection of polio transmission? **Low to medium**. Due to sensitive surveillance and community based surveillance in high risk pop (IDPs, Refugees and nomads); however possible gaps in inaccessible areas
- WPV Importation/spread or emergence of cVDPV is overall **low** (in most areas); however in insecure areas the risk is **medium to high** due to low immunity

# Way forward

**Supplementary strategy to boost immunity of susceptible kids:**

- SNIDs targeting high risk populations, one round planned in first semester.
- Accelerated RI activities.
- Plan is in place to reach the inaccessible children with SIADs once opportunity arises

**Supplementary strategy to improve AFP surveillance sensitivity:**

- Complete structure & system for CBS among nomads, IDPs, border villages
- Expand community based surveillance network especially in conflict areas and low performing districts
- AFP contacts sampling and sampling from healthy children in silent districts
- Focal persons for each nomadic tribe.
- Environmental Surveillance Planned for 2017.

# Summary

| Country | Risk of missing transmission | Risk of WPV importation / spread or emergence of cVDPVs | Capacity of the country/ program to rapid response |
|---|---|---|---|
| Somalia | Low | High | High |
| Sudan | Low - Medium | Medium – High | High |
| Yemen | Low - Medium | Medium – high | Medium - High |
| Syria | Low | Medium | Medium - High |
| Iraq | Medium | Medium | Medium - High |
| Libya | Low | Low - Medium | Medium |